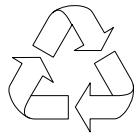
OpenBook 1848

Service Guide

Service guide files and updates are available

on the AOpen service website; for more information, please refer to http://www.AOpen.com/products/nb



100% Recycled Paper

PART NO.: 49.43G01.001

PRINTED IN TAIWAN

Revision History

Please refer to the table below for the updates made on OpenBook 1848 service guide.

Date	Chapter	Updates

Copyright

Copyright © 2004 by AOpen Incorporated. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without the prior written permission of AOpen Incorporated.

Disclaimer

The information in this guide is subject to change without notice.

AOpen Incorporated makes no representations or warranties, either expressed or implied, with respect to the contents hereof and specifically disclaims any warranties of merchantability or fitness for any particular purpose. Any AOpen Incorporated software described in this manual is sold or licensed "as is". Should the programs prove defective following their purchase, the buyer (and not AOpen Incorporated, its distributor, or its dealer) assumes the entire cost of all necessary servicing, repair, and any incidental or consequential damages resulting from any defect in the software.

AOpen is a registered trademark of AOpen Incorporated.

Intel is a registered trademark of Intel Corporation.
Pentium and Pentium II/III are trademarks of Intel Corporation.
Other brand and product names are trademarks and/or registered trademarks of their respective holders.

Conventions

The following conventions are used in this manual:

`Screen messages`	Denotes actual messages that appear on screen.
NOTE	Gives bits and pieces of additional information related to the current topic.
WARNING	Alerts you to any damage that might result from doing or not doing specific actions.
CAUTION	Gives precautionary measures to avoid possible hardware or software problems.
IMPORTANT	Reminds you to do specific actions relevant to the accomplishment of procedures.

Preface

Before using this information and the product it supports, please read the following general information.

1. This Service Guide provides you with all technical information relating to the BASIC CONFIGURATION decided for AOpen "global" product offering. To better fit local market requirements and enhance product competitiveness, your regional office MAY have decided to extend the functionality of a machine (e.g. add-on card, modem, or extra memory capability). These LOCALIZED FEATURES will NOT be covered in this generic service guide. In such cases, please contact your regional offices or the responsible personnel/channel to provide you with further technical details.
2. Please note WHEN ORDERING FRU PARTS, that you should check the most up-to-date information available on your regional web or channel. If, for whatever reason, a part number change is made, it will not be noted in the printed Service Guide. For AOpen AUTHORIZED SERVICE PROVIDERS, your AOpen office may have a DIFFERENT part number code to those given in the FRU list of this printed Service Guide. You MUST use the list provided by your regional Xplore office to order FRU parts for repair and service of customer machines.

Table of Contents

Chapter 1 System Specifications 1

Features 1
System Block Diagram 3
Board Layout 4
Top View 4
Bottom View 5
Outlook View 6
Top View 6
Left Panel 7
Right Panel 8
Rear Panel 9
Bottom Panel 10
Indicators 11
Lock Keys 12
Embedded Numeric Keypad 13
Windows Keys 14
Hot Keys 15
Launch Keys 16
Hardware Specifications and Configurations 17

Chapter 2 System Utilities 31

BIOS Setup Utility 31
Navigating the BIOS Utility 32
System Information 33
Main System Settings 34
Startup Configuration 36
IDE Primary Master 37
Secondary Master 38
Onboard Device Configuration 39
System Security 40
Boot Options 41
Exit Setup 42

Chapter 3 Machine Disassembly and Replacement 43

General Information 44
Before You Begin 44
Disassembly Procedure Flowchart 45
Removing the Battery 47
Removing the Hard Disk Drive Module 48
Disassembling the Hard Disk Drive Module 48
Removing the External DIMM Module 49
Removing the Modem Board 50
Removing the Optical Drive Module 51
Disassembling the Optical Drive Module 51
Disassembling the Main Unit 52
Removing the Hinge Caps 52
Removing the Middle Cover 53
Removing the Keyboard Metal Support 54
Removing the Keyboard 54
Removing the RTC Battery 55
Removing the Keyboard Support Bracket 56
Removing the Antennas 57
Removing the Wireless LAN Board 58
Removing the LCD Module 59

Table of Contents

Separating the Upper Case from the Lower Case 61
Removing the CPU Heat Sink 62
Removing the CPU 62
Removing the FDD Module 63
Removing the HDD Guiding Chassis 63
Removing the VGA Thermal Plate 64
Removing the CPU Thermal Plate 65
Removing the Optical Drive Bracket 65
Removing the Main Board 66
Removing the DC Charger Board 67
Removing the Speakers 67
Removing the PCMCIA Slot 69
Disassembling the LCD Module 70
Removing the LCD Bezel 70
Removing the Inverter Board 71
Removing the LCD 72
Removing the LCD Hinges 73
Removing the LCD Coaxial Cable 73

Chapter 4 Troubleshooting 75

System Check Procedures 76
Power System Check 76
Touchpad Check 76
Phoenix BIOS Error Code Messages 77
Power-On Self-Test (POST) Error Message 80
Index of Error Messages 80
Index of Symptom-to-FRU Error Message 82
Index of PQA Diagnostic Error Code, Message 86

Chapter 5 Jumper and Connector Locations 87

Top View 87
Bottom View 89

Chapter 6 FRU (Field Replaceable Unit) List 91

Exploded Diagram 92

Appendix A Test Compatible Components 103

Microsoft Windows XP Environment Test 104

Index 107

System Specifications

Features

This computer was designed with the user in mind. Here are just a few of its many features:

Performance

- Intel® Pentium® 4 Processor 2.26GHz to 3.2GHz CPU with on-die L2 512KB cache
- 128MB to 1GB System memory, with system memory upgradeable to 2GB with two DDR DIMM slots (DDR 266MHz: PC2100/ DDR333MHz: PC2700)
- 512KB FLASH BIOS with boot block, shadow RAM support.
- Dual display capability
- High-capacity, Enhanced-IDE hard disk
- Li-Ion battery pack
- Power management system with ACPI (Advanced Configuration Power Interface)

Display

- 14.1” or 15.0” Thin-Film Transistor (TFT) eXtended Graphics Array (XGA) liquid crystal-display (LCD)
- 3D capabilities
- Simultaneous LCD and CRT display support
- Supports other output display devices such as LCD projection panels for large-audience presentations
- LCD display with CCFT backlight which can be turned off by software. CCFT backlight has Auto-DIM function to extend battery life.

Multimedia

- Audio codec supports stereo at 18-bit ADC/20-bit DAC
- AC’97 2.2-compliant stereo audio
- S-video out put port
- Line-out jack share with SPDIF
- Enhanced audio system with two speakers
- DVD/CD-RW combo drive, CD-ROM or DVD-ROM drive

Connectivity

- High-speed fax/data modem port
- USB (Universal Serial Bus) ports
- Onboard PCI 10/100 BaseT LAN support on board
- 802.11a/b/g wireless with Wi-Fi logo (optional)
- Wake-on-ring and Wake-on-LAN support

Expansion

- CD-ROM or DVD-ROM drive, and DVD/CD-RW combo drive (optional)
- Upgradeable memory and hard disk

- ❑ IEEE 1394 port
- ❑ One Type II/I or Type III CardBus PC Card slot
- ❑ Secure digital (SD)/ Memory Stick/ Multi Media Card (MMC) 3-in-1 slot

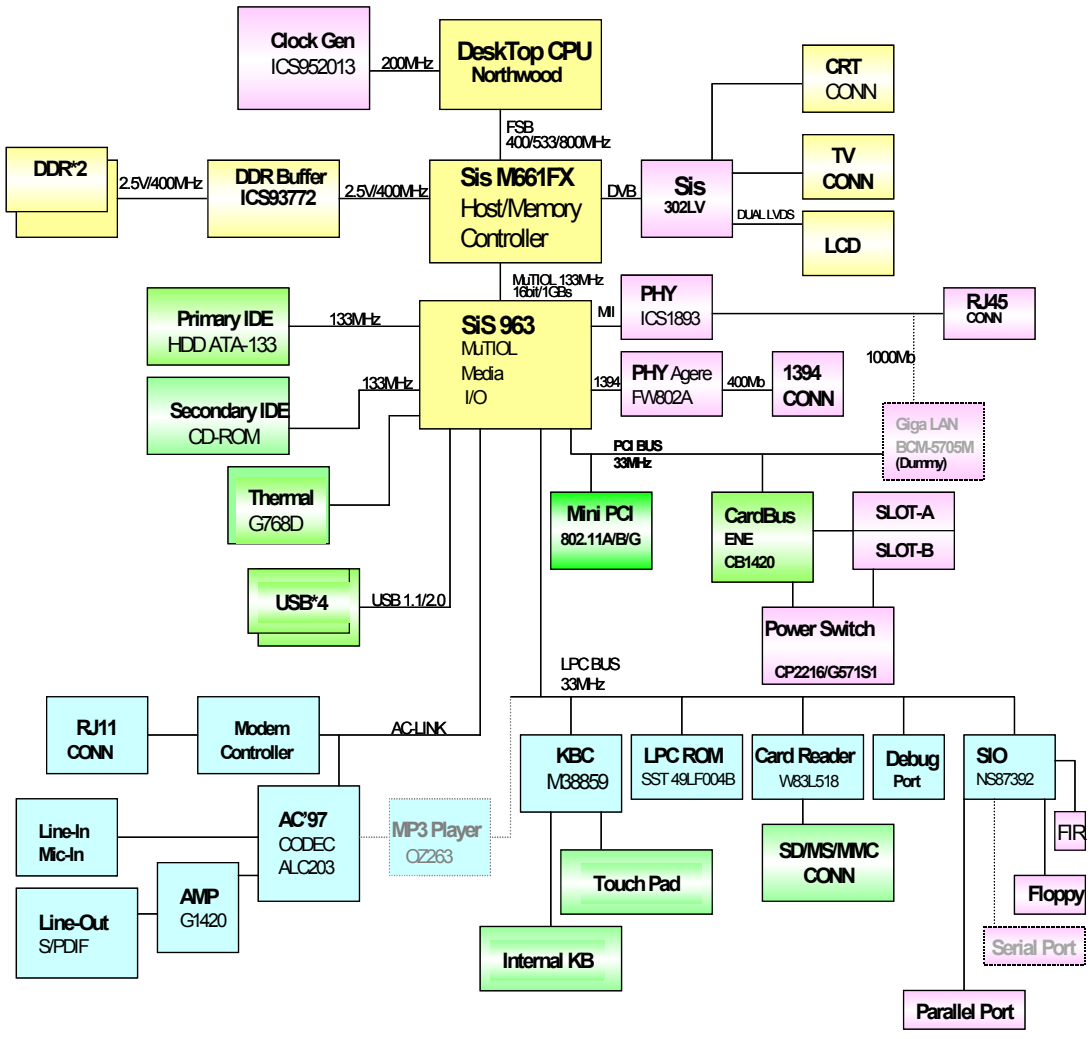
Keyboard and Pointing Device

- ❑ 84-/85-/88-key IBM PC/AT keyboard, with 4 programmable easy launch keys; one wireless button, one power button, one Internet browser button, and one E-Mail button
- ❑ Ergonomically-centered touchpad pointing device with 2 buttons and 4-way scroll key

I/O Ports

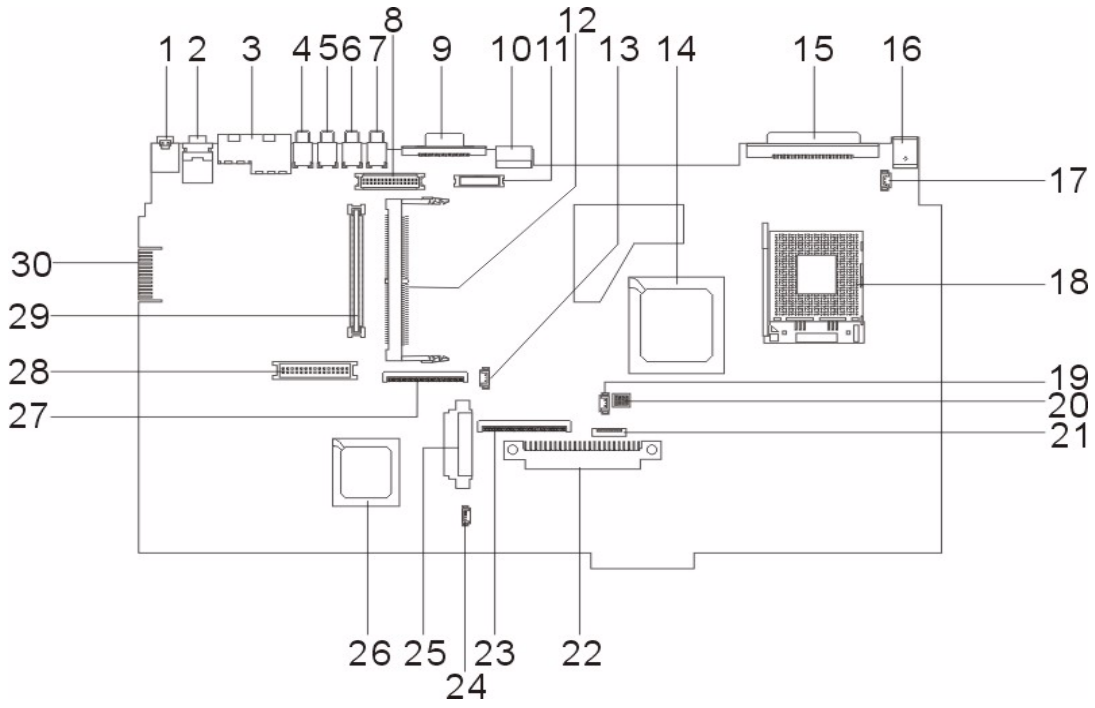
- ❑ Two Type II/I CardBus PC Card slots
- ❑ One RJ-45 jack for 10/100BaseT LAN
- ❑ One RJ-11 56 Kbps fax/modem jack
- ❑ One DC-in jack (AC adapter)
- ❑ TV-out (7 pins) jack
- ❑ One VGA port for external monitor port
- ❑ One audio line-in/microphone-in jack
- ❑ One audio speaker/line-out jack (SPDIF)
- ❑ One FIR port
- ❑ One parallel port
- ❑ Four USB 2.0 ports
- ❑ One IEEE 1394 port
- ❑ Secure Digital (SD)/ Memory Stick/ Multi Media Card 3-in-1 slot

System Block Diagram



Board Layout

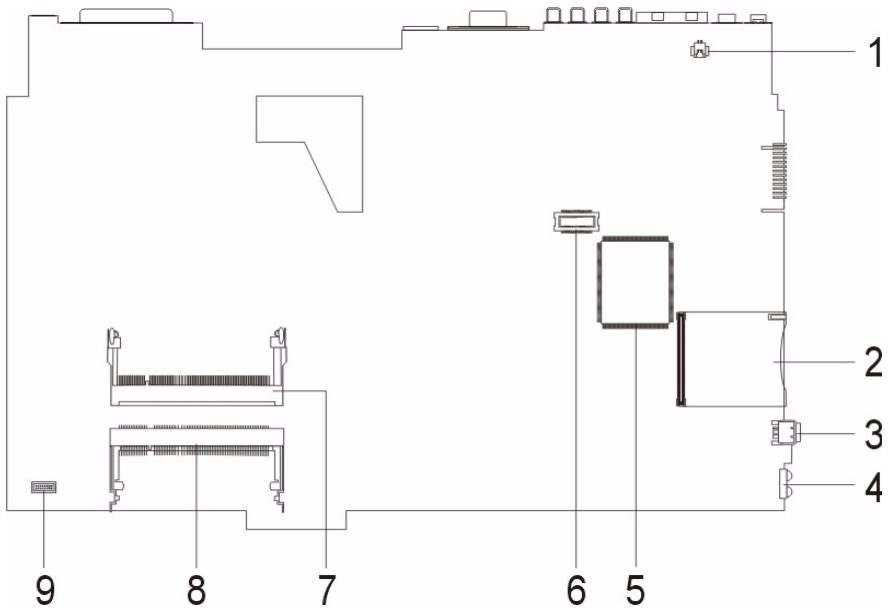
Top View



PCB: 03241-1

1	Line-in connector	16	AC adapter connector
2	Line-out connector	17	Lid cover switch cable connector
3	Modem port (left) Network port (right)	18	CPU socket
4	USB port	19	Fan connector
5	USB port	20	SW1 Setting
6	USB port	21	Touch pad cable connector
7	USB port	22	Hard Diskette Drive connector
8	Inverter cable connector	23	Keyboard connector
9	External monitor port	24	Speaker cable connector
10	TV-out connector	25	Optical drive connector
11	LCD coaxial cable connector	26	South Bridge (SiS963)
12	Mini-PCI connector	27	Floppy diskette drive connector
13	RTC battery connector	28	Launch board cable connector
14	North Bridge (SiS M661FX)	29	PCMCIA cardbus connector
15	Parallel port	30	Golden Finer (Debug Board)

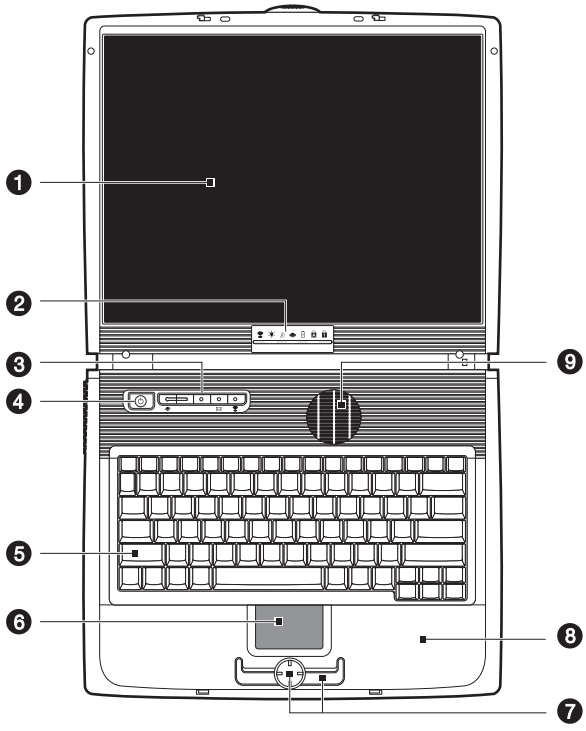
Bottom View



1	Modem cable connector	6	Modem board connector
2	SD/MS/MMC 3-in-1 slot	7	Memory socket 1
3	1394 connector	8	Memory socket 2
4	FIR	9	DC-DC charge board connector
5	CardBus ENE CB1420		

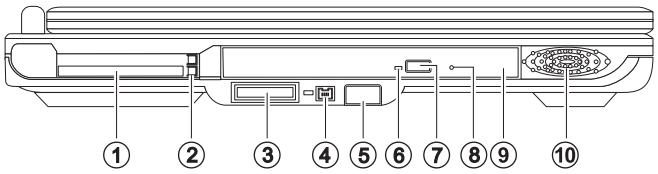
Outlook View

Top View



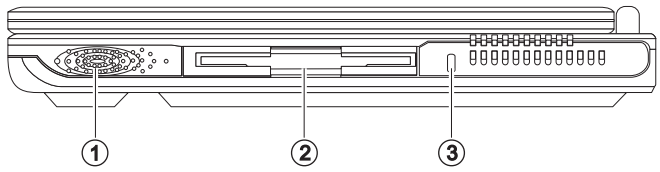
Number	Item	Description
1	Display screen	Also called LCD (liquid-crystal display), displays computer output.
2	Status indicators	LEDs (light-emitting diode) that turn on and off to show the status of the computer, its functions and components.
3	Launch keys	Buttons for launching frequently-used programs.
4	Power button	Turns on the computer power.
5	Keyboard	Inputs data into your computer.
6	Touchpad	Touch-sensitive pointing device which functions like a computer mouse.
7	Click buttons (left, right, and center)	The left and right buttons function like the left and right mouse buttons.
8	Palm rest	Comfortable support area for your hands when you use the computer.
9	Fan grill	Cools the CPU by pulling in cool air.

Left Panel



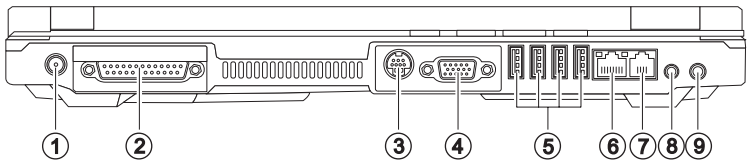
Number	Item	Description
1	PC card slots	Accepts two TypeII/I CardBus PC card.
2	PC card eject button	Ejects the PC card from its slot.
3	3-in-1 slot media slot	Accepts any of the following flash memory cards; Secure Digital (SD), Memory Stick, MultiMedia Card (MMC).
4	IEEE 1394	Connects to an IEEE 1394-compatible device (e.g., digital video camera).
5	Infrared port	Interfaces with infrared devices (e.g., infrared printer, IR-aware computer).
6	Optical drive activity indicator	Lights up when the optical drive is active.
7	Eject button	Ejects the CD/DVD tray.
8	Emergency eject slot	Ejects the optical drive tray when the computer is turned off.
9	Optical drive	Internal optical drive (CD, DVD, or DVD/ CD-RW combo drive).
10	Speaker	Outputs sound

Right Panel



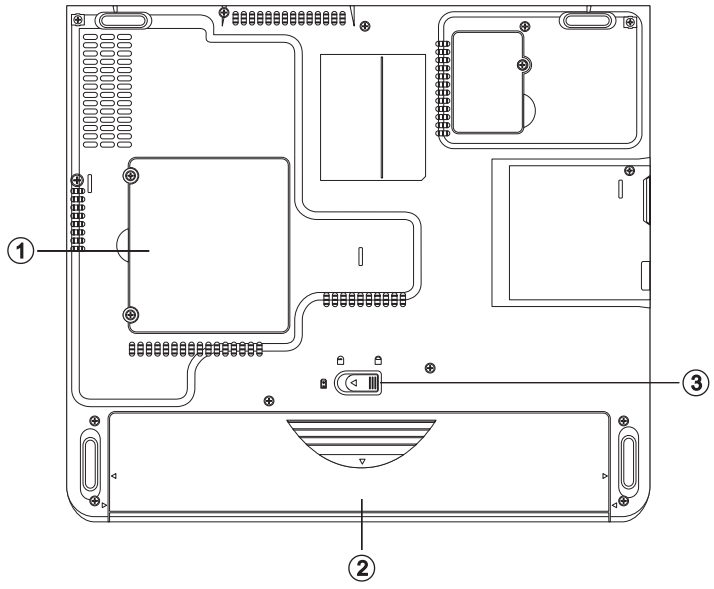
Number	Item	Description
1	Speaker	Outputs sound.
2	Floppy drive	Internal diskette drive, accepts 3.5-inch floppy diskettes.
3	Security keylock	Connects to a Kensington-compatible computer security lock.

Rear Panel



Number	Item	Description
1	DC-in jack	Connects to an AC adapter.
2	Parallel port	Connects to a parallel device (e.g., parallel printer).
3	S-video out port	Connects to a television or display device with S-video input.
4	External monitor port	Connects to a display monitor (up to 2048x1536 resolution).
5	USB (2.0) ports (four)	Connects to USB devices (e.g., USB digital camera).
6	Network jack	Connects to an Ethernet 10/100-based network.
7	Modem jack	Connects a phone line (only for models with an internal fax/data modem).
8	S/PDIF line-out jack	Connects to audio line-out devices (e.g., speakers, headphones); supports S/PDIF connection.
9	Line-in jack	Accepts audio line-in devices (e.g., audio CD player, stereo walkman)

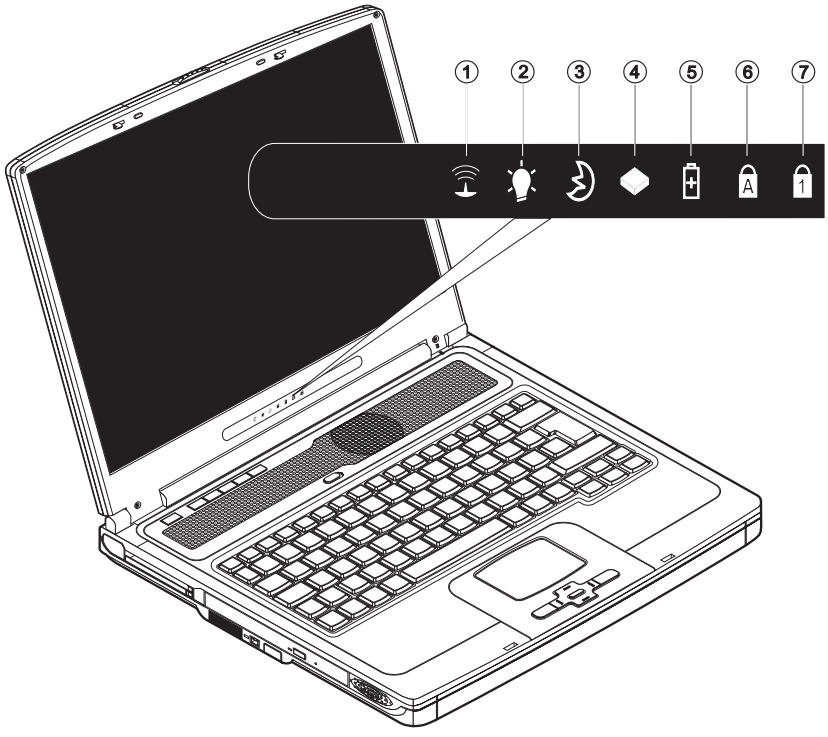
Bottom Panel



Number	Item	Description
1	Memory compartment cover	Houses the computer's main memory.
2	Battery pack	Supplies power to the computer.
3	Battery release latch	Unlatches the battery to remove the battery pack.

Indicators

The computer has seven easy-to-read status indicators (LEDs) under the display screen.

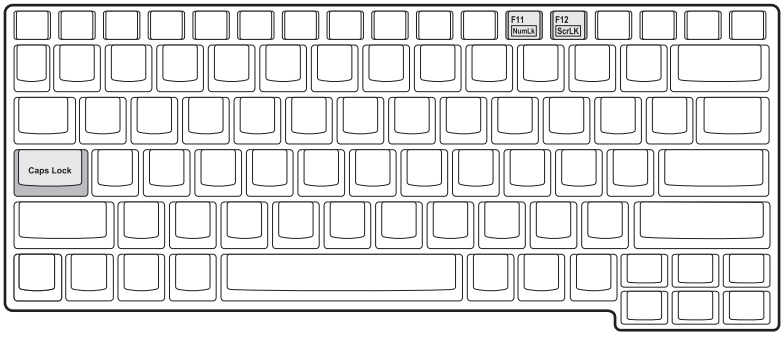


The Power, Sleep status and Wireless Communication icons are visible even when you close the display cover so you can see the status of the computer while the cover is closed.

Number	Icon	Function	Description
1		Wireless Communication	Lights when the Wireless LAN capability (optional) is enabled.
2		Power	Lights when the computer is on.
3		Sleep	Blinks when computer enters Hibernation mode. Lights when computer enters Standby mode.
4		Media Activity	Lights when the hard disk, or Media drive is active.
5		Battery Charge	Lights when the battery is being charged.
6		Caps Lock	Lights when Caps Lock is activated.
7		Num Lock	Lights when Num Lock is activated.

Lock Keys

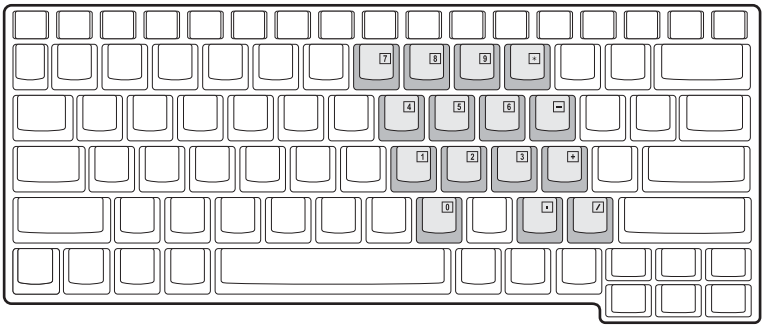
The keyboard has three lock keys which you can toggle on and off.



Lock Key	Description
Caps Lock	When Caps Lock is on, all alphabetic characters typed are in uppercase.
Num Lock (Fn-F11)	When Num Lock is on, the embedded keypad is in numeric mode. The keys function as a calculator (complete with the arithmetic operators +, -, *, and /). Use this mode when you need to do a lot of numeric data entry. A better solution would be to connect an external keypad.
Scroll Lock (Fn-F12)	When Scroll Lock is on, the screen moves one line up or down when you press the up or down arrow keys respectively. Scroll Lock does not work with some applications.

Embedded Numeric Keypad

The embedded numeric keypad functions like a desktop numeric keypad. It is indicated by small characters located on the upper right corner of the key caps. To simplify the keyboard legend, cursor-control key symbols are not printed on the keys.

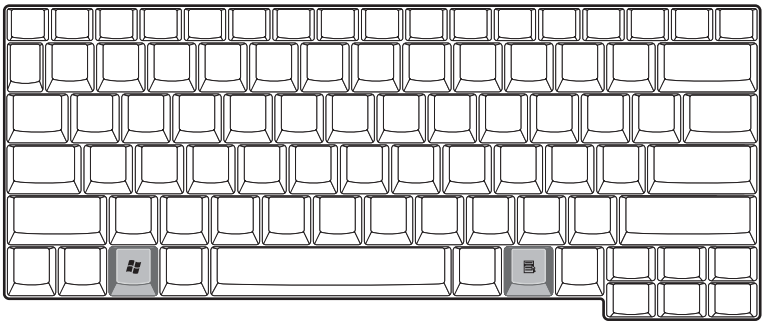


Desired Access	Num Lock On	Num Lock Off
Number keys on embedded keypad	Type numbers in a normal manner.	
Cursor-control keys on embedded keypad	Hold Shift while using cursor-control keys.	Hold Fn while using cursor-control keys.
Main keyboard keys	Hold Fn while typing letters on embedded keypad.	Type the letters in a normal manner.

NOTE: If an external keyboard or keypad is connected to the computer, the Num Lock feature automatically shifts from the internal keyboard to the external keyboard or keypad.

Windows Keys

The keyboard has two keys that perform Windows-specific functions.

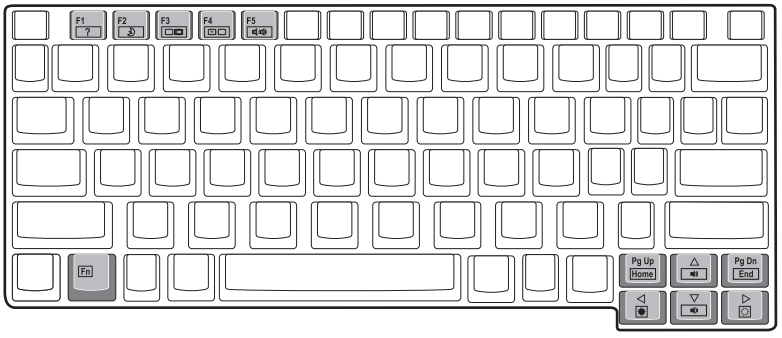


Key	Icon	Description
Windows logo key		Start button. Combinations with this key perform shortcut functions. Below are a few examples: Windows + Tab (Activates next task bar button) Windows + E (Explores My Computer) Windows + F (Finds Document) Windows + M (Minimizes All) Shift + Windows + M (Undoes Minimize All) Windows + R (Displays the Run...dialog box)
Application key		Opens the application's context menu (same as a right-click).

Hot Keys

The computer employs hot keys or key combinations to access most of the computer's controls like screen contrast and brightness, volume output and the BIOS Utility.

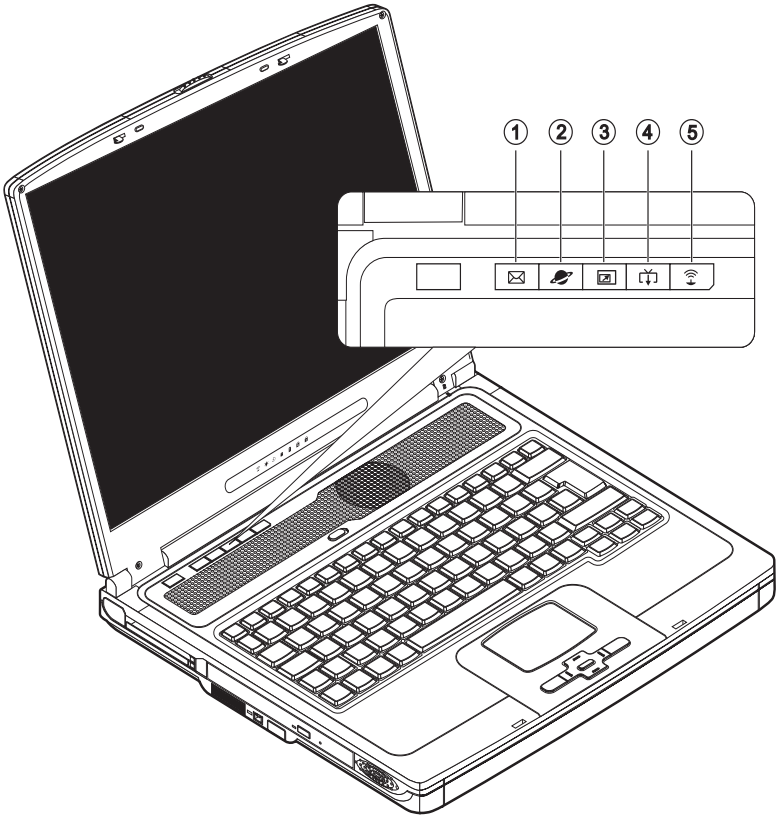
To activate hot keys, press and hold the **Fn** key before pressing the other key in the hot key combination.



Hot Key	Icon	Function	Description
Fn-F1	?	Hot key help	Displays a list of the hotkeys and their functions.
Fn-F2		Sleep	Puts the computer in Sleep mode, which can be defined via the advanced section of the Power Management Properties in the Windows Control Panel.
Fn-F3		Display toggle	Switches display output between the display screen, external monitor (if connected) and both the display screen and external monitor.
Fn-F4		Screen blank	Turns the display screen backlight off to save power. Press any key to return.
Fn-F5		Speaker on/off	Turns the speakers on and off; mutes the sound.
Fn-PG UP	HOME	Home	Functions as the "Home" key.
Fn-PG DN	END	End	Functions as the "End" key.
Fn-		Brightness up	Increases the screen brightness.
Fn-		Brightness down	Decreases the screen brightness.
Fn-	Volume up	Volume up	Increases the volume.
Fn-	Volume down	Volume down	Decreases the volume.

Launch Keys

Located on the left of the keyboard are five buttons. These buttons are called launch keys. They are designated as Wireless Communication, E-mail, Internet Browser, P1 and P2 buttons.



Number	Icon	Function	Description
1		E-mail	The mail button is used to launch the E-mail application.
2		Internet browser	By default, is used to launch your Internet browser.
3		TV out	Automatically switches the display to output on a television that is connected to the s-video port.
4		Resolution	Launches the resolution setting.
5		Wireless communication	This button is used to enable or disable the wireless LAN (optional) function.

Hardware Specifications and Configurations

Processor

Item	Specification
CPU type	Intel® Pentium® 4
CPU package	P478 package
CPU core voltage	1.5V
CPU I/O voltage	1.2V

BIOS

Item	Specification
BIOS vendor	Phoenix
BIOS Version	R01-AXX
BIOS ROM type	LPC Flash
BIOS ROM size	512KB
BIOS package	PLCC 32-pin
Supported protocols	ACPI 1.0b/2.0, PCI 2.2, HDD password, INT 15h Extensions, PnP BIOS 1.0a, SM BIOS 2.3, Simple Boot Flag 1.0, Boot Block, USB Specification 1.1/2.0, DTMP Desktop Management Interface Specification V2.0, CD-ROM Boot Specification V1.0, WfM 2.0 (for build in Ethernet Model), PCMCIA V3.0 Compliant Device, IEEE 1394 V1.0,
BIOS password control	See SW1 setting.

Second Level Cache

Item	Specification
Cache controller	Built-in CPU
Cache size	512KB
1st level cache control	Always enabled
2st level cache control	Always enabled
Cache scheme control	Fixed in write-back

System Memory

Item	Specification
Memory controller	SiS M661FX
Onboard memory size	0MB
DIMM socket number	2 sockets (2 banks)
Supports memory size per socket	128MB, 256MB, 512MB, 1GB
Supports maximum memory size	2048MB
Supports DIMM type	DDR
Supports DIMM Speed	200/ 266/ 333 MHz
Supports DIMM voltage	2.5V
Supports DIMM package	200-pin soDIMM
Memory module combinations	You can install memory modules in any combinations as long as they match the above specifications.

LAN Interface

Item	Specification
Chipset	PHY ICS1893
Supports LAN protocol	10/100 Mbps or Giga LAN
LAN connector type	RJ45
LAN connector location	Rear side

Modem Interface

Item	Specification
Chipset	SiS 963
Fax modem data baud rate (bps)	14.4K
Data modem data baud rate (bps)	56K
Supports modem protocol	V.92 MDC
Modem connector type	RJ11
Modem connector location	Rear side

Floppy Disk Drive Interface

Item		Specification		
Vendor & Model Name		PANASONIC JU-226A033		
Capacity (MFM)		1MB	1.6MB	2MB
Recording Density	Data Transfer Rate (Kbit/sec)	250	500	
	Number of Head	2		
	Track Used	160		
	Track Density	135		
Recording Method		FM/MFM		
Motor Specification	Disk Revolution (rpm)	300	360	300
	LSV (%) (long-period speed variation)	+-1.5 (MAX)		
	LSV (%) (Instantaneous speed variation)	+-2.0 (MAX)		
	Drive Motor Starting Time (msec)	400 (MAX)		
	1 Track Seek Time (msec)	3 (MIN)		
	Settling Time (msec)	15 (MAX)		
Disk Insertion and Ejection	Insertion	800 (MAX)		
	Ejection	1400 (MAX)		
Power Requirement				
Maximum Voltage Tolerance (V)		+5V+-10%		

Hard Disk Drive Interface

Item	Specification
Vendor & Model Name	Hitachi DK23EA-30
Capacity (MB)	30G
Bytes per sector	512
Data heads	2
Recording zone	16
Drive Format	
Disks	1
Spindle speed (RPM)	4200 RPM
Performance Specifications	
Buffer size	2048KB
Interface	ATA-5 (IDE)
Max. media transfer rate (disk-buffer, Mbytes/s)	19.4 ~ 37.1
Data transfer rate (host~buffer, Mbytes/s)	16.6 MB/Sec. (PIO Mode 4/Multiword DMA Mode 2) 100 MB/Sec. (Ultra DMA Mode 5)
DC Power Requirements	
Voltage tolerance	5V(DC) +/- 5%

CD-ROM Interface

Item	Specification
Vendor & Model Name	Mitsumi SR-244W1
Performance Specification	
Transfer rate	Read Sustained: 1545~3600 KB/sec Programmed I/O: 16.7 MB/sec Max. (Mode 0~4) Multi-word DMA: 16.7 MB/sec Max. (Mode 0~2) Ultra DMA: 33.3MB/sec Max.
Access time (typ.)	Random: 115 ms Full Stroke: 250 ms
Rotation speed	5136 rpm
Data Buffer Capacity	128 KB
Interface	IDE
Applicable disc format	CD/CD-ROM(12cm,8cm), CD-R, CD-RW, CD-DA, CD-ROM (Mode 1, Mode2), CD-ROM XA (Mode 2, Form1 and Form 2), Photo CD (Single, Multi-session), Enhanced CD
Loading mechanism	Drawer with soft eject and emergency eject hole
Power Requirement	
Input Voltage	+5V[DC]+/-5%

DVD-ROM Interface

Item	Specification	
Vendor & model name	MKE SR-8177 W/K3	
Performance Specification	With CD Diskette	With DVD Diskette
Transfer rate (KB/sec)	Average Sustained: CAV mode 775~1800 blocks/sec (10.3X to 24X) 1550~3600kBytes/sec (Mode 1) 1768~4106 kBytes/sec (Mode 2)	DVD-5: Normal Speed (1X) 11.08 Mbits/sec CAV mode 36.67~88.64 Mbits/sec DVD-9/DVD-R/DVD-RW: Normal Speed (1X) 11.08 Mbits/sec CAV mode 36.67~88.64 Mbits/sec
Average Full Access time (typ.)	CD: (Disc: MNSU-005) Random (*1) CAV mode 95 msec typical 125 msec average max Full Stroke (*2) CAV mode 200 msec typical 260 msec average max 1/3 Stroke (*3) CAV mode 105 msec typical 135 msec average max	DVD-5:(Disc: MKE-D551) Random (*4) 120 msec typical 160 msec average max Full Stroke (*5) 270 msec typical 350 msec average max 1/3 Stroke (*6) 130 msec typical 170 msec average max DVD-9: (Disc: ODSC-PARA) Random (*7) 150 msec typical 200 msec average max Full Stroke (*8) 340 msec typical 450 msec average max 1/3 Stroke (*9) 170 msec typical 220 msec average max DVD-RAM (2.6G) (Disc: LM-DB26) Random (*10) 200 msec typical 300 msec average max Full Stroke (*11) 300 msec typical 600 msec average max Full Stroke (*12) 220 msec typical 320 msec average max DVD-RAM (4.7G) (Disc: LM-HB47J) Random (*13) 180 msec typical 300 msec average max Full Stroke (*14) 320 msec typical 700 msec average max Full Stroke (*15) 240 msec typical 350 msec average max
Data Buffer Capacity	256 kBytes	
Interface	IDE	

DVD-ROM Interface

Item	Specification
Applicable disc format	DVD: DVD-5, DVD-9, DVD-10, DVD-18, DVD-R (3.95G/4.7G), DVD-RAM (2.6G/4.7G), DVD-RW CD: CD-Audio, CD-ROM (mode 1 and mode 2), CD-ROM XA (mode 2, form 1 and form 2), CD-I (mode 2, form 1 and form 2), CD-I Ready, CD-I Bridge, CD-WO, CD-RW, Photo CD, Video CD, Enhanced Music CD, CD-TEXT
Loading mechanism	Soft eject (with emergency eject hole)
Power Requirement	
Input Voltage	+5V[DC]+/-5%

(*1) Average of Data read over the whole area from 00 min. 02 sec. 00 block to 59 min. 58 sec. 74 block more than 2000 times including latency and layered error correction time.
(*2) From 00 min. 02 sec. 00 block to 59 min. 58 sec. 74 block including latency and layered error correction time.
(*3) From 00 min. 02 sec. 00 block to 20 min 00 sec. 00 block including latency and layered error correction time.
(*4) Average of Data read over the whole area from starting data recorded area (LBA:0) to maximum data recorded area (LBA:23197F), more than 2000 times including latency and layered error correction time.
(*5) From starting data recorded area (LBA:0) to maximum data recorded area (LBA:23197F) including latency and layered error correction time.
(*6) From starting data recorded area (LBA:0) to maximum data recorded area (LBA:86A29) including latency and layered error correction time.
(*7) Average of Data read over the whole area from starting data recorded area (LBA:0) to maximum data recorded area (LBA:3FA0DF), more than 2000 times including latency and layered error correction time.
(*8) From starting data recorded area (LBA:0) to maximum data recorded area (LBA:3FA0DF) including latency and layered error correction time.
(*9) From starting data recorded area (LBA:0) to maximum data recorded area (LBA:277D8E) including latency and layered error correction time.

DVD + RW Interface

Item	Specification
Vendor & Model name	Lite-On LSC-24081
Performance Specification	
Transfer rate (MB/sec)	Ultra DMA: 33.3 blocks/sec DMA Mode 2: 33.3 MBytes/sec PIO Mode 4: 33.3 MBytes/sec
Speed	Writing: 24X (3600KB/Sec) Zone-CLV (5 Zones, start from 8X, 12X@11min, 16X@21min, 20X@42min, 24X@67min) Rewriting: 12X (1800KB/Sec) Zone-CLV (2 Zones, start from 10X, 12X@11min) Reading: CD Family: 24X (3600KB/Sec) CAV (4X~24X), DAE Maximum Speed 24X CAV DVD Family: 8X (10800KB/Sec) CAV (1.7X~8X)

DVD + RW Interface

Item	Specification
Access time (typ.)	Random: DVD 100 ms / CD 95 ms Full Stroke: 170 ms
Rotation speed	5000 rpm (typ.)
Buffer memory	2MB
Interface	ATA/ ATAPI-5/ MMC-3 and SFF8090 Ver5, Revision 1.2
Applicable disc format	CD-DA, CD-ROM (Mode-1, Mode-2), CD-ROM XA Mode-2 (FORM-1, FORM-2), CD-I Ready, Video-CD (MPEG-1), Karaoke-CD, Photo-CD, Enhance CD, CD extra, I-Trax CD and UFD
PC required	Pentium 166MHz or faster CPU, 64MB DRAM required HDD must have access time < 29 ms, with a minimum of 100MBytes free space.
Compatibility	MS-Windows 95/ 98/ ME/ 2000/ XP/ NT4.0
MTBF (Life)	70,000 Hours
Loading mechanism	Drawer with soft eject and emergency eject hole
Power Requirement	
Input voltage	5V(DC) +/- 5%

Audio Interface

Item	Specification
Audio Controller	SiS 963
Audio onboard or optional	Built-in
Mono or Stereo	Stereo
Resolution	20 bit stereo Digital to analog converter 18 bit stereo Analog to Digital converter
Compatibility	Microsoft PC98/PC99, AC97 2.1
Mixed sound source	PC speaker, phone line, mic, line-in, CD-in
Voice channel	8/16-bit, mono/stereo
Sampling rate	44.1 KHz
Internal microphone	Yes
Internal speaker / Quantity	Yes
Supports PnP DMA channel	Not available
Supports PnP IRQ	IRQ11

Video Interface

Item	Specification
Chip vendor and model name	SiS M661FX
Chip voltage	Core/1.45V Memory/2.5V
Supports ZV (Zoomed Video) port	No
Graph interface	Digit Video Link
Maximum resolution (LCD)	14.1” TFT XGA, 1024x768 15.0” TFT XGA, 1024x768
Maximum resolution (CRT& LCD)	1024x768x16M colors
Maximum resolution (CRT)	1600X1200

Video Memory

Item	Specification
Fixed or upgradeable	Fixed
Video memory size	64MB (SMA)

Video Resolutions Mode

Resolution	8 bits (256 colors)	16 bits (High color)	32 bits (True color)
640x480	Yes	Yes	Yes
800x600	Yes	Yes	Yes
1024x768 (Maximum for: 14.1” TFT XGA, 15.0” TFT XGA, External CRT)	Yes	Yes	Yes

Parallel Port

Item	Specification
Parallel port controller	NS SIO PC87392
Number of parallel port	1
Location	Rear side
Connector type	25-pin D-type connector, in female type
Parallel port function control	Enable/Disable by BIOS Setup
Supports ECP/EPP	Yes (set by BIOS setup)
Optional ECP DMA channel (in BIOS Setup)	DMA channel 1 and 3
Optional parallel port I/O address (in BIOS Setup)	378, 278, 3BC
Optional parallel port IRQ (in BIOS Setup)	IRQ7, IRQ5

USB Port

Item	Specification
USB Compliancy Level	1.1/ 2.0
OHCI	1.1/ 2.0
Number of USB port	4
Location	Rear side
Serial port function control	Enable/Disable by BIOS Setup

IrDA Port

Item	Specification
IrDA FIR port controller	NS SIO PC87392
Number of IrDA FIR port	1
Location	Left side
IrDA FIR port function control	Enable/disable by BIOS Setup
IrDA FIR port (in BIOS Setup)	2F8~2EF
IrDA FIR port IRQ (in BIOS Setup)	IRQ3
ECP DMA channel (in BIOS Setup)	DMA channel 01, 03
Optional IrDA FIR port DRQ (in BIOS Setup)	Not available

PCMCIA Port

Item	Specification
PCMCIA controller	ENE CB1420
Supports card type	Type-II/I
Number of slots	Two Type -II/I
Access location	Left side
Supports ZV (Zoomed Video) port	No ZV support
Supports 32 bit CardBus	Yes (IRQ11)

System Board Major Chips

Item	Controller
System core logic	Intel SiS M661FX Intel SiS 963
Super I/O controller	NS PC87392
Audio controller	Intel SiS 963
Video controller	Intel SiS M661FX
Hard disk drive controller	Intel SiS 963
Keyboard controller	Mitsubishi M38857
RTC	Intel SiS 963

Keyboard

Item	Specification
Keyboard controller	Mitsubishi M38857
Keyboard vendor & model name	Sunrex K020830A1/UI US
Total number of keypads	84/85/88 international language key (10 languages)
Windows 95 keys	Yes
Internal & external keyboard work simultaneously	Yes

Battery

Item	Specification	
Vendor & model name	Sanyo SI-AS38	Sony LIPX048
Battery Type	Li-Ion	
Pack capacity	6600 mAH	6450 mAH
Cell voltage	3.7V/cell	3.7V/cell
Number of battery cell	12	12
Package configuration	4 cells in series, 3 in parallel	4 cells in series, 3 in parallel
Package voltage	14.8 V	14.8V

DC-AC LCD Inverter

Item	Symbol	Specification		
Vendor & model name		AMBIT 14/15” T62I194.12		
Input Characteristics				
Input voltage (VDC)		6.5 (min.)	-	21.0 (max.)
Input current (ADC)		-	-	1 (max.)
Input power (W)		-	-	4.9(max.)
Backlight On/Off control		2.0(min.)	-	3.6(max.)
		-0.3(min.)	-	0.8(max.)
On/Off control (mA) (Input current)		-	-	2.56(max.)
Brightness_1 (PWM input)		0 (min.)	3.3 (typ.)	80(max.)
Brightness_2 (DC input)		0(min.)	-	3.0(max.)
Output Characteristics				
Output voltage (Vrms)		-	600 (typ.)	-
Output Current (mArms)	Min.	0(min.)	0.6 (typ.)	1.2(max.)
	Max.	5.5(min.)	6.0 (typ.)	6.5(max.)
Frequency (KHz)		40(min.)	-	70 (max.)
Output Power (W)		-	-	3.96 (max.)
Burst mode frequency (Hz)		260(min.)	260(typ.)	290 (max.)
Efficiency (%)		80(min.)	-	-

NOTE: DC-AC inverter is used to generate very high AC voltage, then support to LCD CCFT backlight user, and is also responsible for the control of LCD brightness. Avoid touching the DC-AC inverter area while the system unit is turned on.

NOTE: There is an EEPROM in the inverter, which stores its supported LCD type and ID code. If you replace a new inverter or replace the LCD with a different brand, use Inverter ID utility to update the ID information.

LCD

Item	Specification	
Vendor & model name	AU B150XG01 V.2	Hitachi TX38D81VC1CAB
Mechanical Specifications		
LCD display area (diagonal, inch)	15	15
Display technology	TFT	TFT
Resolution	XGA (1024x768)	XGA (1020x768)
Supports colors	262K	262K
Optical Specification		
Brightness control	Keyboard hotkey	Keyboard hotkey
Contrast control	No	No
Electrical Specification		
Supply voltage for LCD display (V)	3.3	3.3

AC Adapter

Item	Specification
Vendor & model name	LISHIN 0227A20120
Input Requirements	
Maximum input current (A, @90Vac, full load)	2A
Nominal frequency (Hz)	50-60
Frequency variation range (Hz)	47-63
Input voltage range (Vrms)	90-264
Inrush current	The maximum inrush current will be less than 50A and 100A when the adapter is connected to 115Vac and 230Vac respectively.
Efficiency	It should provide an efficiency of 83% minimum, when measured at maximum load under 115Vac.
Output Ratings (CV mode)	
DC output voltage	20V
Noise + Ripple	300mVp-pmax (20 MHz bandwidth)
Load	0(min) 6A(max)
Output Ratings (CC mode)	
DC output voltage	19.5V~21V for CV mode
Constant current mode	7.0 +/- 0.5A
Dynamic Output Characteristics	
Turn-on delay time	2 sec (@ 115Vac)
Hold up time	8ms (@115Vac, Full load)
Over Voltage Protection (OVP)	25V
Short circuit protection	The output can be shorted without damage
Electrostatic discharge (ESD)	15KV (at air discharge) 8KV (at contact discharge)
Dielectric Withstand Voltage	
Primary to secondary	1500Vac
Leakage current	0.25 mA max. (@ 254Vac, 60Hz)

AC Adapter

Item	Specification
Regulatory Requirements	Safety Requirements: 1.The subject product rated 100-120V 60Hz must be listed under UL 1950 and certified with SCA Standard C22.2 No.950. 2.The subject product rated 200-240V 50Hz must comply with low voltage directive 73/23EEC. EMI Requirements: 1.The subject product rated 100-120V 60Hz must meet the EMI requirements of FCC part 15, Subpart B for Class B Digital Device and get FCC Certification before marketing into USA and Canada. 2.The subject product rated 200-240V 50Hz must meet the EMC Directive 89/336/EEC. 3.The subject product rated 100-120V must meet the VCCI-2 EMI requirements.

Power Management

Power Saving Mode	Phenomenon
Standby Mode Waiting time specified by the System Standby value or the operating system elapses without any system activity. Or When the computer is about to enter Hibernation mode (e.g., during a battery-low condition), but the Hibernation file is invalid or not present.	❑ The Sleep indicator lights up
Hibernation Mode When customized functions for power management are set to **Hibernation** and the corresponding action is taken.	❑ All power shuts off
Display Standby Mode Keyboard, built-in touchpad, and an external USB pointing device are idle for a specified period.	❑ The display shuts off

Environmental Requirements

Item	Specification
Temperature	
Operating	+5~+35 °C
Non-operating	-10~+60 °C
Non-operating	-30~+60 °C (storage package)
Humidity	
Operating	20% to 80% RH, non-condensing
Non-operating	20% to 80% RH, non-condensing (unpacked)
Non-operating	20% to 90% RH, non-condensing (storage package)
Vibration	
Operating (unpacked)	2~200Hz: 0.40Grms
Non-operating (unpacked)	2~200Hz: 0.80Grms
Non-operating (packed)	2~200Hz: 1.00Grms
Shock	

Environmental Requirements

Item	Specification
Operating	25G/3ms, 10 times each 4 horizontal directions 35G/3ms, 10 times each 2 vertical directions
Non-operating	160G/3ms, 1 time all 6 directions

Mechanical Specification

Item	Specification
Dimensions	326 (W) x 290 (D) x 36.8~38.6 (H) mm
Weight	7.5 lbs for 14.0” TFT model
I/O Por	One type III or two type II/I Cardbus PC Card slot, One RJ-11 phone jack (V.92), One RJ-45 network jack (Ethernet 10/100), One DC-in jack, One external monitor port (DDC 2.0), One parallel port, One audio line-out jack (SPDIF) (3.5mm mini-jack), One audio line-in jack (3.5mm mini-jack), Four USB 2.0 ports, One IEEE 1394 port , One S-video output port, One RJ-45 network jack (Ethernet 10/100) (option), Secure Digital (SD)/ Memory Stick/ 3-in-1 Card slot, One Fast Infrared port, FDD.
Drive Bays	Two
Material	Housing: MCS-050 Panel : Plastic
Indicators	Wireless Communication, Power LED, Sleep LED, Media Activity, Battery Charge, Caps Lock, Num Lock
Switch	Power

Memory Address Map

Memory Address	Size	Function
FF800000-FFFFFFFF	640KB	Firmware hub device
D1000000-D1FFFFFF	640KB	Processor to AGP controller
E0000000-EFFFFFFF	640KB	Processor to AGP controller
00A00000-000BFFFF	640KB	Processor to AGP controller
C0000000-CFFFFFFF	640KB	Processor to AGP controller
FECF0000-FECFFFFF	640KB	Motherboard resources
FED20000-FED8FFFF	640KB	Motherboard resources
000A0000-000BFFFF	640KB	PCI bus
000D0000-000D3FFF	640KB	PCI bus
000D4000-000D7FFF	640KB	PCI bus
000D8000-000DBFFF	640KB	PCI bus
20000000-FEBFFFFF	640KB	PCI bus
000D8000-000DBFFF	640KB	PCI bus

I/O Address Map

I/O Address	Function
0000-000F	Direct memory access controller
0081-008F	Direct memory access controller
00C0-00DF	Direct memory access controller
0A79-0A79	ISAPNP read data port

I/O Address Map

I/O Address	Function
0279-0279	ISAPNP read data port
0274-0274	ISAPNP read data port
0062-0062	Microsoft ACPI-compliant Embedded controller
0066-0066	Microsoft ACPI-compliant Embedded controller
0061-0061	System speaker
0040-0043	System timer
0050-0053	System timer
03B0-03BB	Intel(R) processor to AGP controller-2571
03C0-03DF	Intel(R) processor to AGP controller-2571
0000-0CF7	PCI bus
0D00-FFFF	PCI bus
0020-0021	Programmable interrupt controller
00A0-00A1	Programmable interrupt controller
0010-001F	Motherboard resources
0024-0025	Motherboard resources
0028-0029	Motherboard resources
002C-002D	Motherboard resources
0030-0031	Motherboard resources
0034-0035	Motherboard resources
003C-003D	Motherboard resources
0072-0077	Motherboard resources
0080-0080	Motherboard resources
0090-009F	Motherboard resources
00A4-00A5	Motherboard resources
00A8-00A9	Motherboard resources
00AC-00AD	Motherboard resources
00B0-00B5	Motherboard resources
00B8-00B9	Motherboard resources
00BC-00BD	Motherboard resources
1000-107F	Motherboard resources
1180-11BF	Motherboard resources
002E-002F	Motherboard resources
04D0-04D1	Motherboard resourcesr
FE00-FE00	Motherboard resources
0600-060F	Motherboard resources
00F0-00FE	Numeric Data Processor
0070-0071	System CMOS/real time clock
2040-205F	Intel(R) SMBus controller

IRQ Assignment Map

Interrupt Channel	Function
IRQ0	System Timer
IRQ1	Keyboard
IRQ2	Cascade
IRQ3	IR

IRQ Assignment Map

Interrupt Channel	Function
IRQ4	Reserved for PCMCIA R2 Card
IRQ5	Reserved for PCMCIA R2 Card
IRQ6	FDD
IRQ7	LPT (Parallel port)
IRQ8	CMOS/ RTC
IRQ9	SCI IRQ used by ACPI bus
IRQ10	CardBus, SMBUS, IEEE1394, VGA
IRQ11	Audio, Modem, LAN, USB, 802.11B
IRQ13	Math Processor
IRQ14	IDE Primary channel
IRQ15	IDE Secondary channel

DMA Channel Assignment

DMA Channel	Function
DRQ1	IrDA FIR
DRQ2	Standard Floppy disk controller
DRQ4	DMA controller

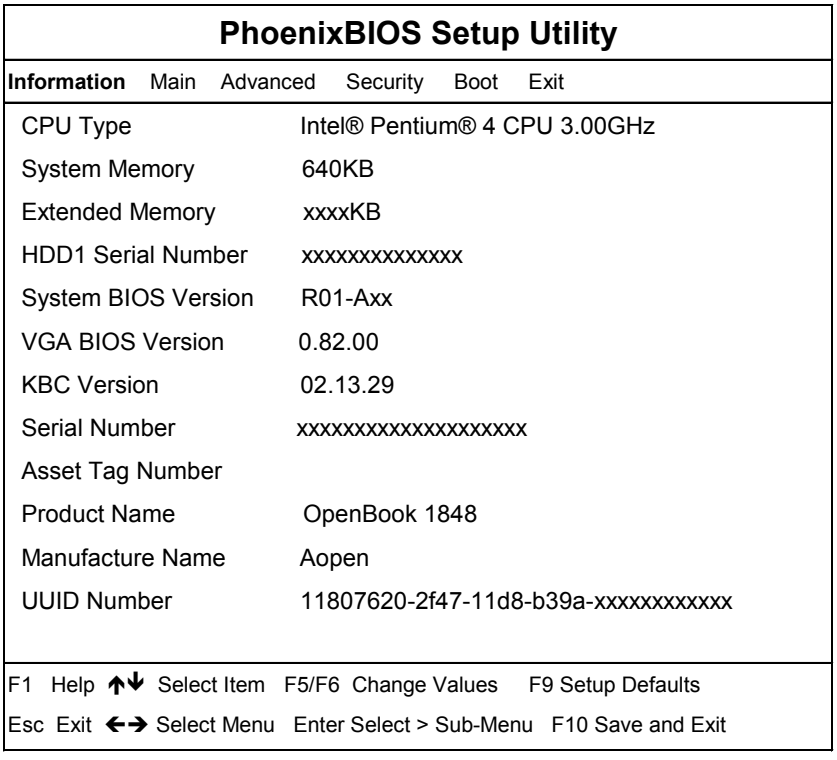
System Utilities

BIOS Setup Utility

The BIOS Setup Utility is a hardware configuration program built into your computer's BIOS (Basic Input/ Output System).

Your computer is already properly configured and optimized, and you do not need to run this utility. However, if you encounter configuration problems, you may need to run Setup. Please also refer to Chapter 4 Troubleshooting when problem arises.

To activate the BIOS Utility, press F2 during POST


PhoenixBIOS Setup Utility
Information Main Advanced Security Boot Exit
CPU Type Intel® Pentium® 4 CPU 3.00GHz
System Memory 640KB
Extended Memory xxxxKB
HDD1 Serial Number xxxxxxxxxxxxxx
System BIOS Version R01-Axx
VGA BIOS Version 0.82.00
KBC Version 02.13.29
Serial Number xxxxxxxxxxxxxxxxxxx
Asset Tag Number
Product Name OpenBook 1848
Manufacture Name Aopen
UUID Number 11807620-2f47-11d8-b39a-xxxxxxxxxxxx
F1 Help Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit Select Menu Enter Select > Sub-Menu F10 Save and Exit

Navigating the BIOS Utility

There are six menu options: System Information, Main System Settings, Advanced, System Security, Boot Options and Exit Setup.

To enter a menu, highlight the item using the ↑ / ↓ keys, then press ENTER .

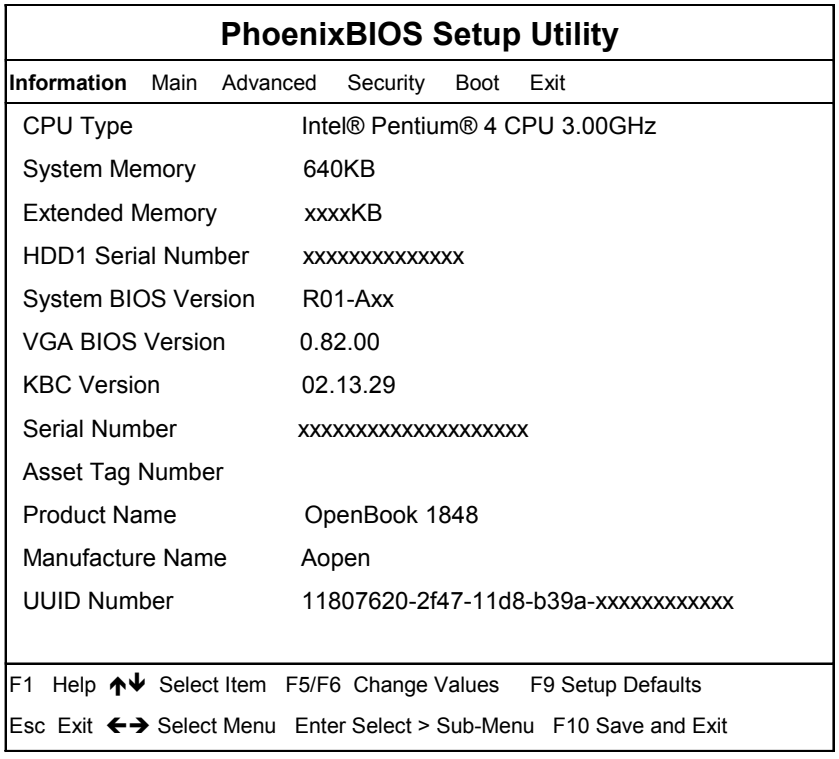
Within a menu, navigate through the BIOS Utility by following these instructions:

- Press the ↑ / ↓ keys to move between the parameters.
- Press the ← / → keys to change the value of a parameter.
- Press the ESC key while you are in any of the menu options to return to the main menu.

NOTE: You can change the value of a parameter if it is enclosed in square brackets. Navigation keys are shown at the bottom of the screen.

System Information

The System Information screen displays a summary of your computer hardware information.


PhoenixBIOS Setup Utility
Information Main Advanced Security Boot Exit
CPU Type Intel® Pentium® 4 CPU 3.00GHz
System Memory 640KB
Extended Memory xxxxKB
HDD1 Serial Number xxxxxxxxxxxxxx
System BIOS Version R01-Axx
VGA BIOS Version 0.82.00
KBC Version 02.13.29
Serial Number xxxxxxxxxxxxxxxxxxx
Asset Tag Number
Product Name OpenBook 1848
Manufacture Name Aopen
UUID Number 11807620-2f47-11d8-b39a-xxxxxxxxxxxx
F1 Help Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit Select Menu Enter Select > Sub-Menu F10 Save and Exit

NOTE: The screen above is a sample and may not reflect the actual data on your computer. “X” may refer to a series of numbers and/or characters.

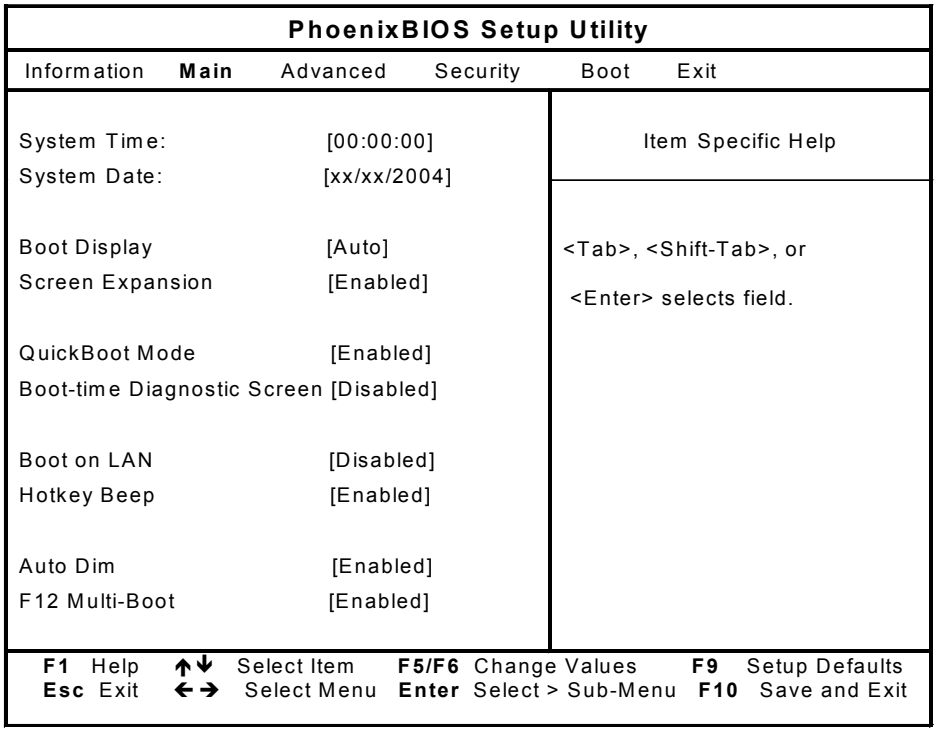
The following table describes the information in this screen.

Parameter	Description
CPU Type	Display the CPU type
CPU Speed	Display the CPU Speed.
System Memory	Display the current system memory.
Extended Memory	Display the current extended memory
HDD1 Serial Number	Display the primary master HDD serial number. If no primary master HDD, show ‘None’.
System BIOS Version	The current system BIOS version
VGA BIOS Version	The current VGA BIOS version. It is got from VGA BIOS AX=5F01h.
KBC Version	The current KBC version.
Serial Number	Display the system serial number. (32 characters)
Asset Tag Number	Display the asset tag number (16 characters)
Product Name	Display the Product Name. (15 characters)
Manufacturer Name	Display the Manufacturer Name (15 characters)
UUID	Display the universally unique identifier of your computer. (16 Byte Hex digital)

The items in this screen are important and vital information about your computer. If you experience computer problems and need to contact technical support, this data helps our service personnel know more about your computer.

Main System Settings

The Main System Settings screen allows you to set the system date and time.


PhoenixBIOS Setup Utility
Information Main Advanced Security Boot Exit
System Time: [00:00:00]
System Date: [xx/xx/2004]
Boot Display [Auto]
Screen Expansion [Enabled]
QuickBoot Mode [Enabled]
Boot-time Diagnostic Screen [Disabled]
Boot on LAN [Disabled]
Hotkey Beep [Enabled]
Auto Dim [Enabled]
F12 Multi-Boot [Enabled]
Item Specific Help
<Tab>, <Shift-Tab>, or
<Enter> selects field.
F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select > Sub-Menu F10 Save and Exit

The following table describes the parameters in this screen.

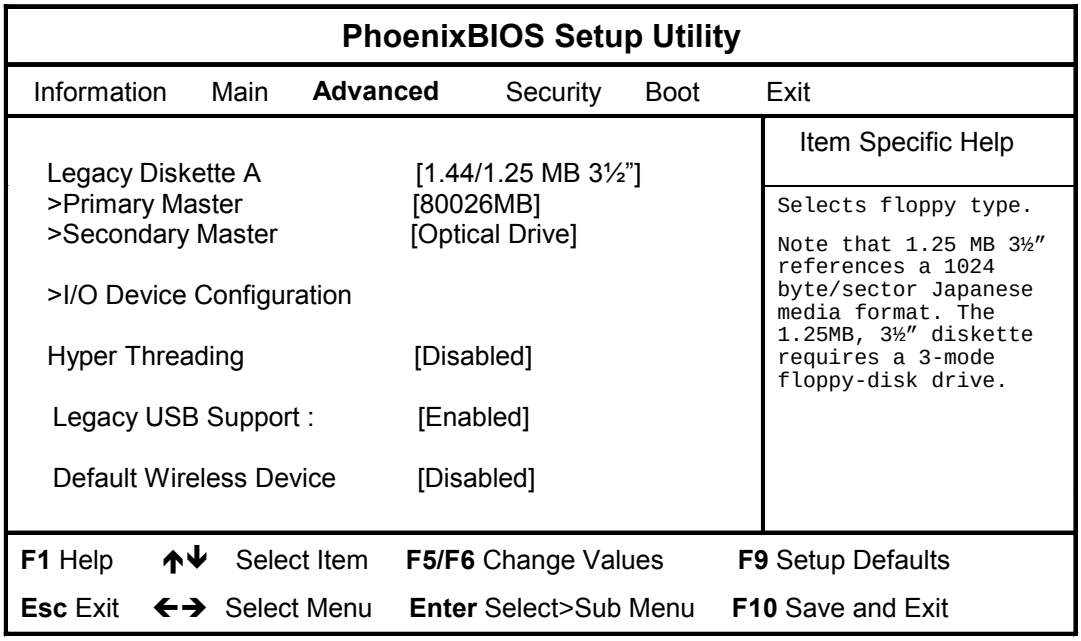
.

Parameter	Description
System Time	Sets the system time Format: HH:MM:SS (Hour : Minute : Second) *Help:* <Tab>,<Shft-Tab>, or <Enter> selects field.
System Date	Sets the system date. Format: MM/DD/YYYY (Month/Day/Year) *Help:* <Tab>, <Shift>, or <Enter> selects field.
Boot Display	Set the display output device on boot up. *Help:* Set the display output device on boot up. When set to Auto, the computer automatically determines the display device. If an external display device (e.g., monitor) is connected, it becomes the boot display. When set to Both, the computer outputs to both the LCD and the external display if one is connected. Option: Both or **Auto**
Screen Expansion	Options: **Enable** or Disable. *Help:* Options: Enable or Disable.
QuickBoot Mode	Options: **Enable** or Disable *Help:* Allow the system to skip certain tests while booting. This will decrease the time needed to boot the system.
Boot-time Diagnostic Screen	Display logo screen during boot Options: Enable or **Disable** *Help:* Enable to show the Boot-time Diagnostic screen during boot up.

Parameter	Description
Boot on LAN	Options: Enable or **Disable.** *Help:* When set to enabled, system will boot on LAN. Notice: Need to restart system for enabling Boot-on-LAN function.
Hotkey Beep	Options: **Enable** or Disable *Help:* Enable or disable hotkey beep.
Auto Dimm	Options: **Enable** or Disable *Help:* The system will support an automatic dimming of the LCD backlight when the AC power is NOT available (running on battery power)..
F12 Multi-Boot	Options: **Enable** or Disable. *Help:* Users could choose if to display 'Fn-F12 for multi-boot' message during post

Startup Configuration

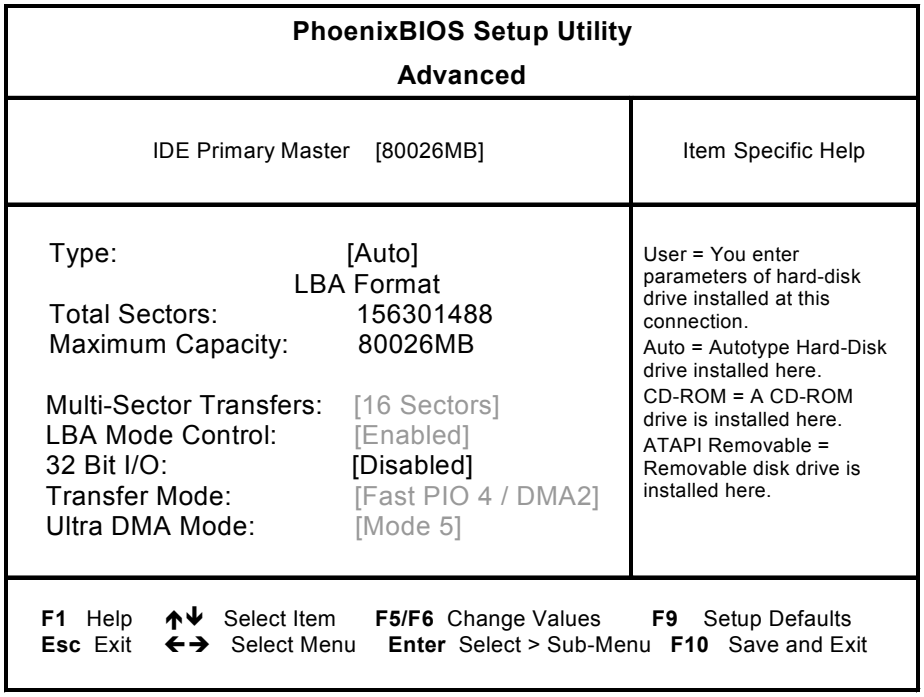
The Startup Configuration screen contains parameter values that define how your computer behaves on system startup.


PhoenixBIOS Setup Utility
Information Main Advanced Security Boot Exit
Item Specific Help
Legacy Diskette A [1.44/1.25 MB 3½"]
>Primary Master [80026MB]
>Secondary Master [Optical Drive]
>I/O Device Configuration
Hyper Threading [Disabled]
Legacy USB Support : [Enabled]
Default Wireless Device [Disabled]
Selects floppy type.
Note that 1.25 MB 3½" references a 1024 byte/sector Japanese media format. The 1.25MB, 3½" diskette requires a 3-mode floppy-disk drive.
F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select>Sub Menu F10 Save and Exit

The following table describes the parameters in this screen. Settings in **boldface** are the default and suggested parameter settings.

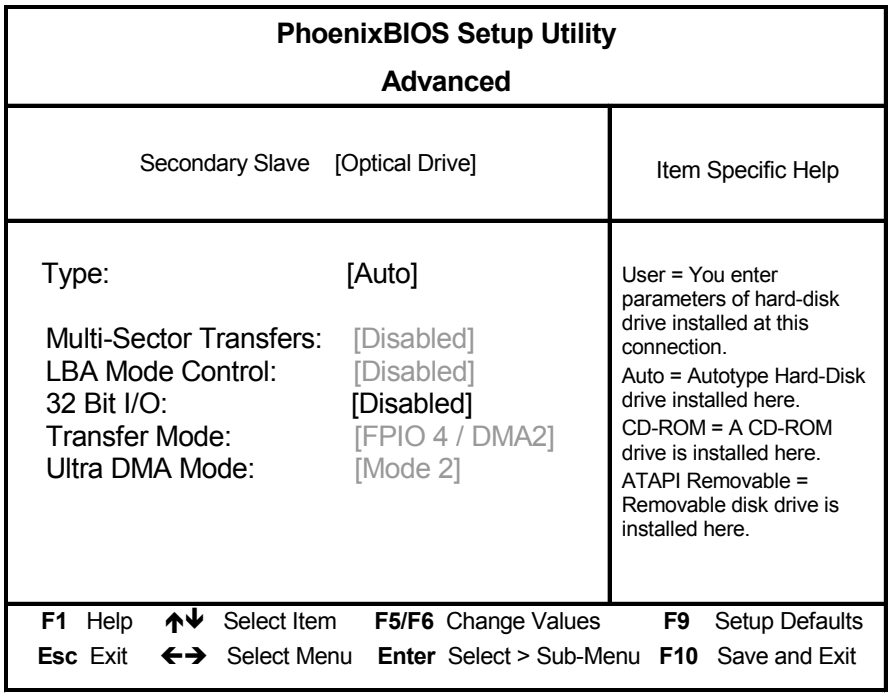
Parameter	Description	Options
Legacy Diskette A	Enable or Disable Legacy Diskette A	**1.44/1.25MB 3 1/2"** Disabled 360Kb 5 1/4" 1.2MB 5 1/4" 720Kb 3 1/2" 2.88MB 3 1/4"
Primary Master	Show IDE Primary Master Information. User can enter submenu to set some detail functions	
Secondary Master	Show IDE Secondary Master Information User can enter submenu to set some detail functions.	
I/O Device Configuration	Enter submenu to set I/O device configuration *Help: Pheripheral Configuration.*	
Hyper Threading	Supports on system with Hyper-Threading CPU	Enabled **Disabled**
Legacy USB Support	Set Enabled or Disabled USB BIOS Legacy Support. *Help:* Set Enable support for Legacy Universal Serial Bus.	**Enabled** Disabled
Default Wireless Device	Select wireless device radio enable by default. *Options:* [Disabled]: The default state of Wireless LAN in OS is "Off". [Last State]:SKeep on the final state "On/Off" of Wireless LAN when system shut down from OS.	**Disabled** Enabled

IDE Primary Master


PhoenixBIOS Setup Utility
Advanced
IDE Primary Master [80026MB]
Item Specific Help
Type: [Auto]
LBA Format
Total Sectors: 156301488
Maximum Capacity: 80026MB
Multi-Sector Transfers: [16 Sectors]
LBA Mode Control: [Enabled]
32 Bit I/O: [Disabled]
Transfer Mode: [Fast PIO 4 / DMA2]
Ultra DMA Mode: [Mode 5]
User = You enter parameters of hard-disk drive installed at this connection.
Auto = Autotype Hard-Disk drive installed here.
CD-ROM = A CD-ROM drive is installed here.
ATAPI Removable = Removable disk drive is installed here.
F1 Help
Select Item
F5/F6 Change Values
F9 Setup Defaults
Esc Exit
Select Menu
Enter Select > Sub-Menu
F10 Save and Exit

Parameter	Description
Type	The setting of detail functions stands on type *Help:* User = You enter parameters of hard-disk drive installed at this connection. Auto = Autotype Hard-Disk drive installed here. CD-ROM = A CD-ROM drive is installed here. ATAPI Removable = Removable disk drive is installed here.

Secondary Master

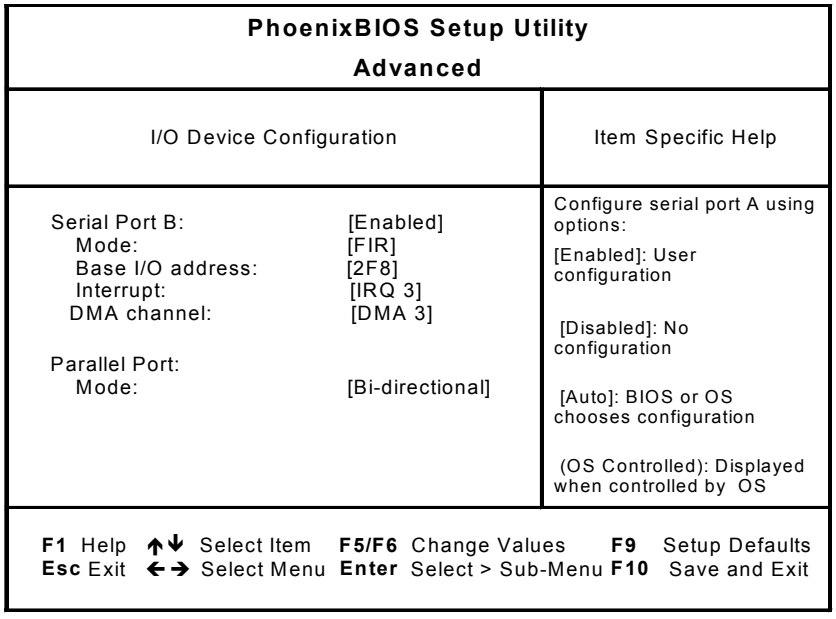

PhoenixBIOS Setup Utility
Advanced
Secondary Slave [Optical Drive]
Item Specific Help
Type: [Auto]
Multi-Sector Transfers: [Disabled]
LBA Mode Control: [Disabled]
32 Bit I/O: [Disabled]
Transfer Mode: [FPIO 4 / DMA2]
Ultra DMA Mode: [Mode 2]
User = You enter parameters of hard-disk drive installed at this connection.
Auto = Autotype Hard-Disk drive installed here.
CD-ROM = A CD-ROM drive is installed here.
ATAPI Removable = Removable disk drive is installed here.
F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select > Sub-Menu F10 Save and Exit

Description	Parameter
Type	The setting of detail functions stands on type *Help:* User = You enter parameters of hard-disk drive installed at this connection. Auto = Autotype Hard-Disk drive installed here. CD-ROM = A CD-ROM drive is installed here. ATAPI Removable = Removable disk drive is installed here.

Onboard Device Configuration

The parameters in this screen are for advanced users only. You do not need to change the values in this screen because these values are already optimized.

The Onboard Device Configuration screen assigns resources to basic computer communication hardware.

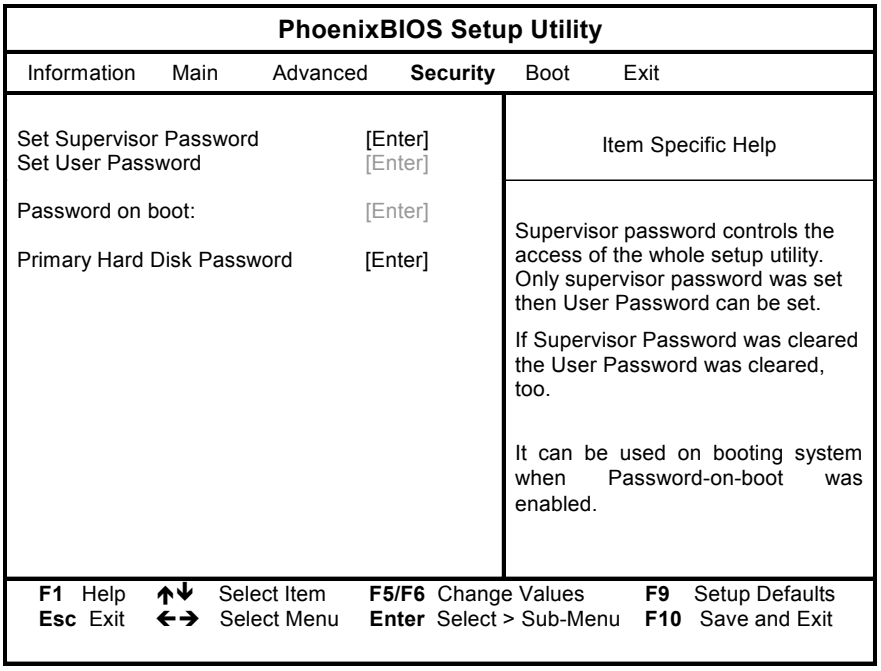

PhoenixBIOS Setup Utility
Advanced
I/O Device Configuration
Item Specific Help
Serial Port B: [Enabled]
Mode: [FIR]
Base I/O address: [2F8]
Interrupt: [IRQ 3]
DMA channel: [DMA 3]
Parallel Port:
Mode: [Bi-directional]
Configure serial port A using options:
[Enabled]: User configuration
[Disabled]: No configuration
[Auto]: BIOS or OS chooses configuration
(OS Controlled): Displayed when controlled by OS
F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select > Sub-Menu F10 Save and Exit

Parameter	Description	Options
Serial Port B	Enables or disables the infrared port. The infrared port is a PnP device. Enabled/Disabled setting won't affect the Windows Device Manager setting of the infrared port.	**Enabled** Disabled
Mode	Sets operation mode of the serial port B.	**FIR,** Normal, IrDA, ASK-IR
Base I/O address	Sets the base I/O address, of the parallel port. *Help:* Set the base I/O address for the serial port B.	3F8, **2F8**, 3E8 or 2E8
Interrupt	Sets the interrupt request of the parallel port. *Help:* Set the interrupt request for the serial port B.	**IRQ 3**, IRQ 4
DMA channel	Sets a DMA channel for the FIR operation *Help:* Set the DMA channel for the FIR of serial port B.	DMA 1 or **DMA 3**
Parallel Port	Enables or disables the Parallel port.	
Mode	Sets operation mode of the serial port B.	**Bi-directional,** Output only EPP ECP

NOTE: When the device is disabled, all the sub-items will be hidden.

System Security

The System Security screen contains parameters that help safeguard and protect your computer from unauthorized use.

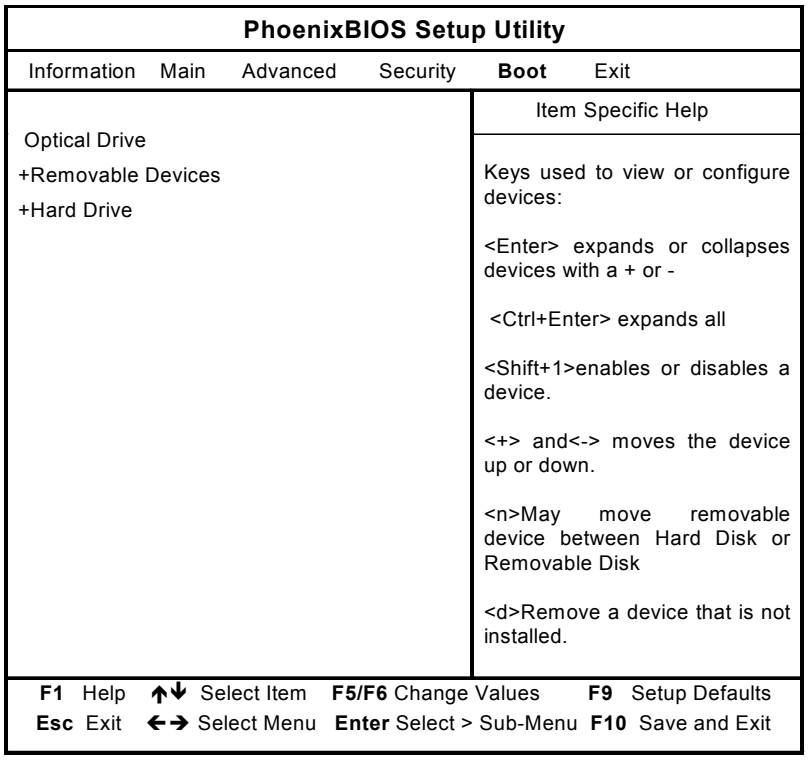

PhoenixBIOS Setup Utility
Information Main Advanced Security Boot Exit
Set Supervisor Password [Enter]
Set User Password [Enter]
Password on boot: [Enter]
Primary Hard Disk Password [Enter]
Item Specific Help
Supervisor password controls the access of the whole setup utility. Only supervisor password was set then User Password can be set.
If Supervisor Password was cleared the User Password was cleared, too.
It can be used on booting system when Password-on-boot was enabled.
F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select > Sub-Menu F10 Save and Exit

The following table describes the parameters in this screen. Settings in **boldface** are the default and suggested parameter settings.

Parameter	Description	Options
Set Supervisor Password	While entering SETUP, BIOS need to request user to enter supervisor password if set. This password protects the BIOS SETUP menu from unauthorized entry. It can be used on booting system when Password-on-boot was enabled. This password protects the system from unallowable user entry before OS boots up.	**Enter**
Set User Password	While entering SETUP, BIOS need to request user to enter supervisor password if set. This password protects the BIOS SETUP menu from unauthorized entry. It can be used on booting system when Password-on-boot was enabled. This password protects the system from unallowable user entry before OS boots up *Help:* User Password controls access to the system at boot.	**Enter**
Password on boot	During POST, BIOS need to check power on password if set. This password protects the computer from unauthorized entry during boot-up. *Help:* Enables password entry on boot.	**Enabled** or Disable
Primary Hard Disk Password	Input HDD password	**Enter**

NOTE: When there is no primary or secondary Hard Disk exist, its Hard Disk Password option should be hidden.

Boot Options


PhoenixBIOS Setup Utility
Information Main Advanced Security Boot Exit
Item Specific Help
Optical Drive
+Removable Devices
+Hard Drive
Keys used to view or configure devices:
<Enter> expands or collapses devices with a + or -
<Ctrl+Enter> expands all
<Shift+1>enables or disables a device.
<+> and<-> moves the device up or down.
<n>May move removable device between Hard Disk or Removable Disk
<d>Remove a device that is not installed.
F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select > Sub-Menu F10 Save and Exit

NOTE: There are four priorities that can let the user to specify the boot device sequence.

The priority of options from top to down is 1st, 2nd, 3rd, 4th.

If the Removable Device or Hard Drive option has multi devices, show '+' in front of option and show each device information.

If secondary Hard Disk exists, user can also choose it to Boot. If secondary hard Disk is nonexistence, hide the secondary Hard Disk option.

Help:

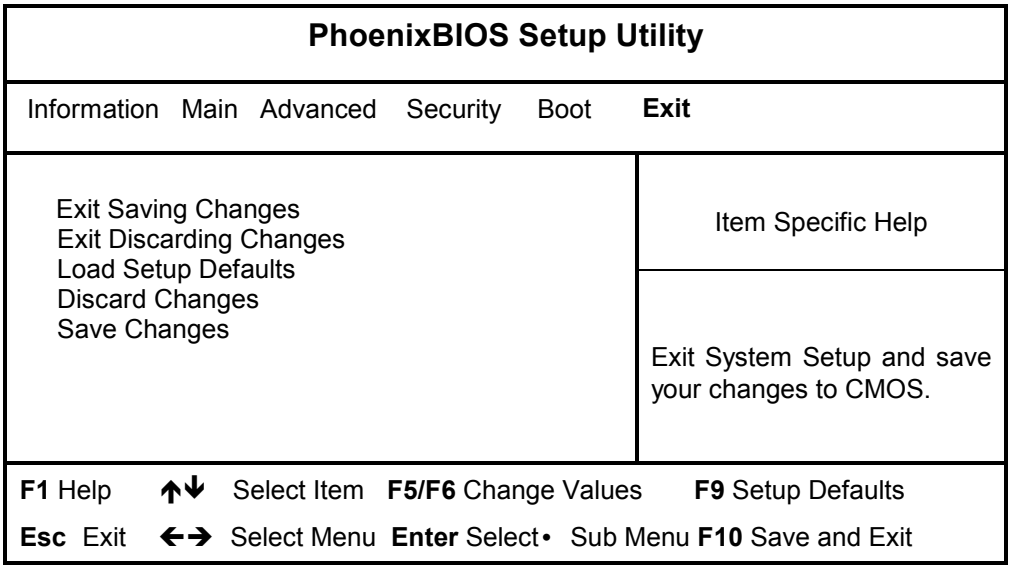
Keys used to view or configure devices:

<Enter> expands or collapses devices with a + or -

<F5> and <F6> moves the device up or down.

Exit Setup

This menu contains exit options.


PhoenixBIOS Setup Utility
Information Main Advanced Security Boot Exit
Exit Saving Changes
Exit Discarding Changes
Load Setup Defaults
Discard Changes
Save Changes
Item Specific Help
Exit System Setup and save your changes to CMOS.
F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select • Sub Menu F10 Save and Exit

The following table describes the parameters in this screen. Setting in **boldface** are the defaults and suggested parameter settings.

Parameter	Description
Exit Saving Changes	Save any changes, and exit BIOS setup. *Help:* Exit System Setup and save your changes to CMOS.
Exit Discarding Changes	Discard any changes, and exit BIOS setup. *Help:* Exit utility without saving Setup data to CMOS.
Load Setup Defaults	Load Setup Defaults. *Help:* Load default values for all SETUP items.
Discard Changes	Discard any changes. *Help:* Load previous value from CMOS for all SETUP items.
Save Changes	Save changes. *Help:* Save Setup data to CMOS.

Machine Disassembly and Replacement

This chapter contains step-by-step procedures on how to disassemble the notebook computer for maintenance and troubleshooting.

To disassemble the computer, you need the following tools:

- Wrist grounding strap and conductive mat for preventing electrostatic discharge
- Flat screwdriver
- Plastic flat tip tweezers
- Phillips screwdriver
- Plastic flat screwdriver
- Plastic tweezers

NOTE: The screws for the different components vary in size. During the disassembly process, group the screws with the corresponding components to avoid mismatch when putting back the components.

NOTE: The images are not yet available at this time, once it will be ready this service guide will be revised accordingly.

General Information

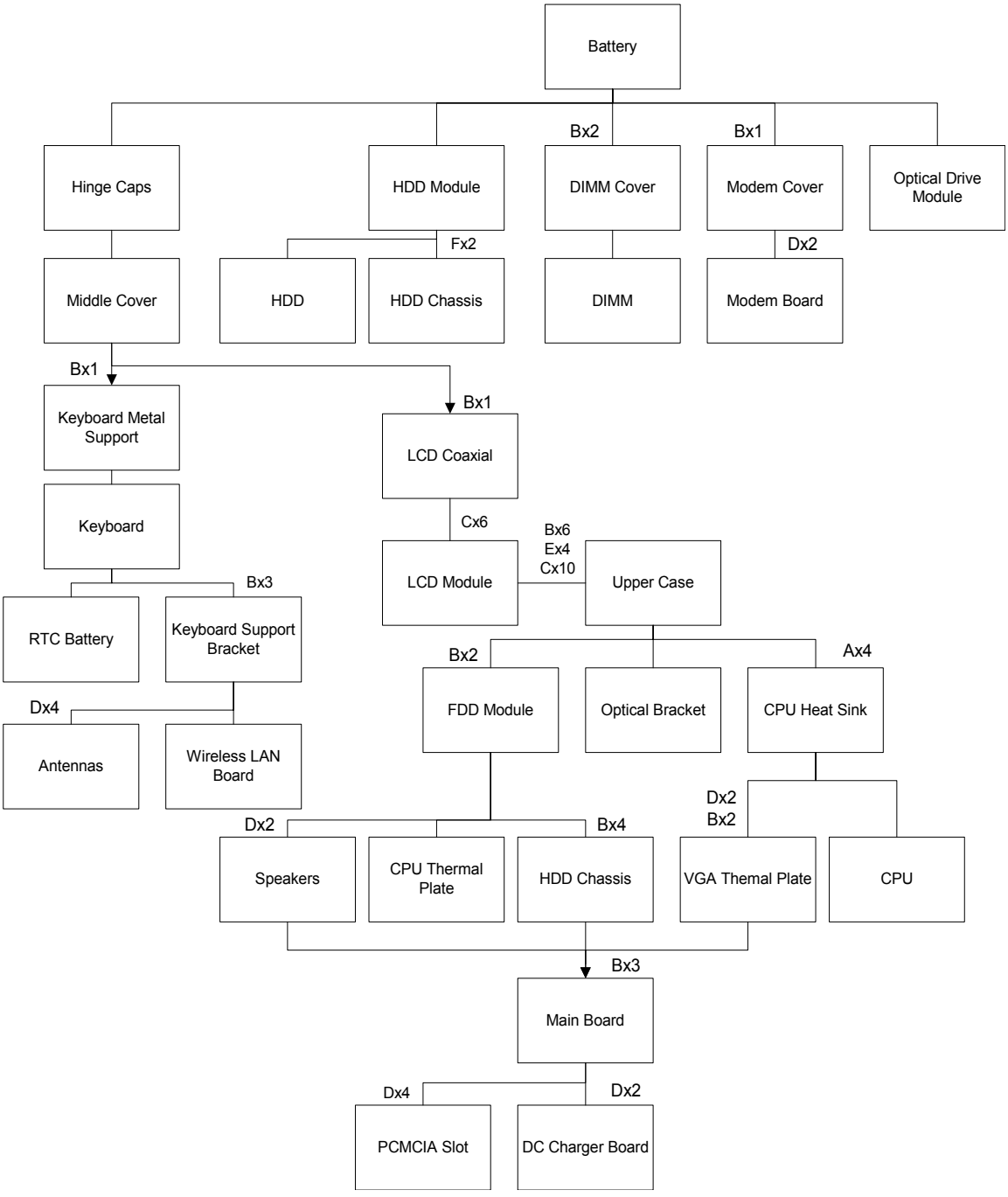
Before You Begin

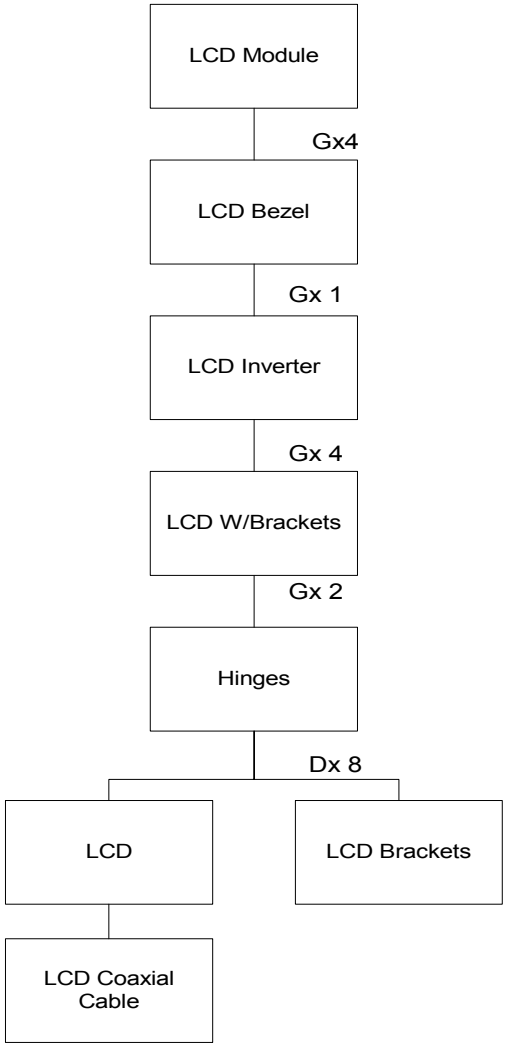
Before proceeding with the disassembly procedure, make sure that you do the following:

1. Turn off the power to the system and all peripherals.
2. Unplug the AC adapter and all power and signal cables from the system.
3. Remove the battery pack.

Disassembly Procedure Flowchart

The flowchart on the succeeding page gives you a graphic representation on the entire disassembly sequence and instructs you on the components that need to be removed during servicing. For example, if you want to remove the main board, you must first remove the keyboard, then disassemble the inside assembly frame in that order.





Screw List

Item	Description
A	SCREW M2.5XL4 (SILVER)
B	SCREW M2XL4 Nylok (SILVER)
C	SCREW M2.5XL8 Nylok (BLACK)
D	SCREW M2.0XL3 Nylok (SILVER)
E	SCREW M2.5XL3 Nylok (SILVER)
F	SCREW M3XL4 Nylok (SILVER)
G	SCREW M2.5XL6 Nylok (BLACK)

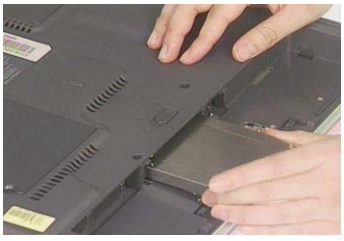
Removing the Battery

1. Push the battery release button in the arrow direction and push the battery outward from the main unit.

2. Remove the battery from the system.

Removing the Hard Disk Drive Module

1. See “Removing the Battery” on page 47
2. Pull the plastic tag to detach the HDD module as shown.



Disassembling the Hard Disk Drive Module

1. See “Removing the Battery” on page 47
2. Remove the two screws as shown here, and then detach the HDD from the HDD bracket.

Removing the External DIMM Module

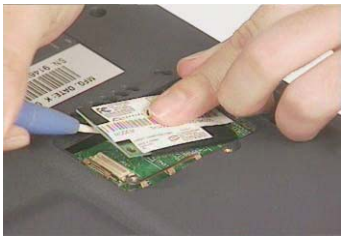
1. See “Removing the Battery” on page 47
2. Remove the two screws on the DIMM cover, then remove the DIMM cover from the lower case.

3. Push out the latches on both sides of the DIMM socket and then remove the DIMM module.

Removing the Modem Board

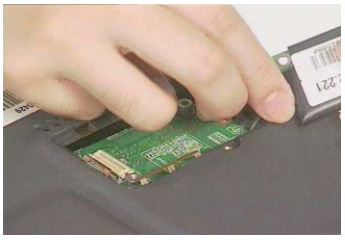
1. See “Removing the Battery” on page 47
2. Remove the one screw and then lift up the modem cover.

3. Remove the two screws, and detach the modem board from the main board by using a plastic flat screwdriver.



4. Disconnect the modem cable from the main board and remove the modem board away.

.



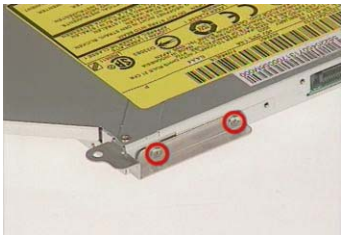
Removing the Optical Drive Module

1. See “Removing the Battery” on page 47
2. Remove the one screw, use plastic flat tip tweezers to push the optical drive module out in the direction as shown.

3. Gently detach the optical drive module out from the main unit .

Disassembling the Optical Drive Module

1. See “Removing the Battery” on page 47
2. See “Removing the Optical Drive Module” on page 51
3. Remove the two screws and then detach the optical drive holder from the optical drive.



Disassembling the Main Unit

Removing the Hinge Caps

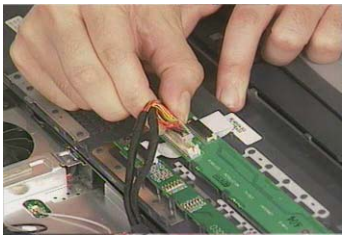
1. See “Removing the Battery” on page 47
2. Adjust the LCD module to 45 degrees as shown.

3. Use a plastic flat screwdrier to help detach the hinge caps and remove them from the main unit.

Removing the Middle Cover

1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. To remove the middle cover, pry up the middle cover with a plastic flat screwdriver in the way as shown

4. Turn the middle over and put it on the keyboard. Disconnect the launch board cable from the middle cover.



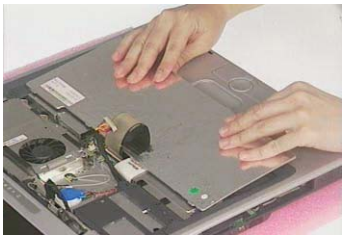
5. Remove the middle cover from the main unit.

Removing the Keyboard Metal Support

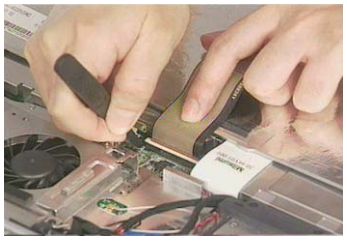
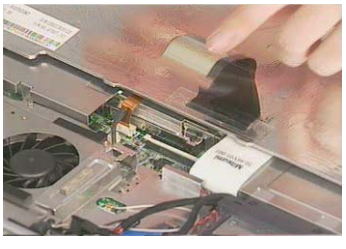
1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. See “Removing the Middle Cover” on page 53
4. Remove the one screw and detach the small keyboard support bracket.

Removing the Keyboard

1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. See “Removing the Middle Cover” on page 53
4. See “Removing the Keyboard Metal Support” on page 54
5. Lift the keyboard up and put it on the upper case.



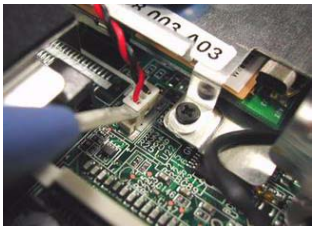
6. Disconnect the keyboard cable from the main board by using tweezers.

7. Remove the keyboard away.

Removing the RTC Battery

1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. See “Removing the Middle Cover” on page 53
4. See “Removing the Keyboard Metal Support” on page 54
5. See “Removing the Keyboard” on page 54
6. Detach the RTC battery and disconnect the RTC cable from the mainboard.



NOTE: Please make sure that you install the RTC battery immediately soon after you uninstall it to prevent the CMOS from resetting. While you install the RTC battery back, route the RTC cable as shown.

Removing the Keyboard Support Bracket

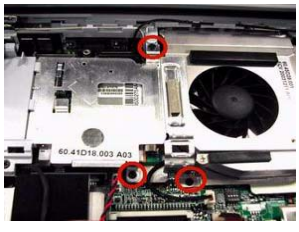
1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. See “Removing the Middle Cover” on page 53
4. See “Removing the Keyboard Metal Support” on page 54
5. See “Removing the Keyboard” on page 54
6. Remove the screw, and then disconnect the LCD coaxial cable from the main board. Release the cable from the clip as shown below.

.

7. Disconnect the inverter cable from the main board.

.

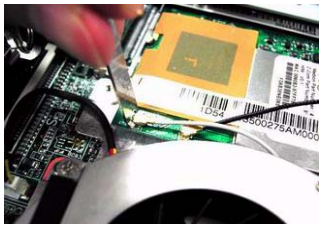
8. Remove the three screws and then detach the keyboard support bracket from the main unit.



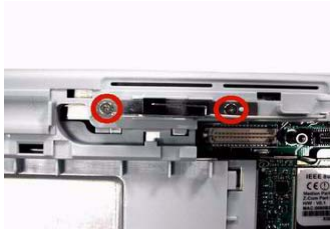
Removing the Antennas

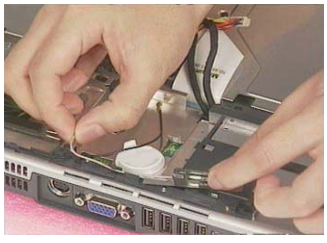
1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. See “Removing the Middle Cover” on page 53
4. See “Removing the Keyboard Metal Support” on page 54
5. See “Removing the Keyboard” on page 54
6. Disconnect the two RF cables from the sockets on the wireless LAN board.

.



7. Remove the two screws and detach the left antenna.





8. Remove the two screws and detach the right antenna.

NOTE: When attaching the antennas back to the upper case, make sure the two RF cables are routed as shown.

NOTE: Please ignore this step if your notebook is not equipped with antennas.

Removing the Wireless LAN Board

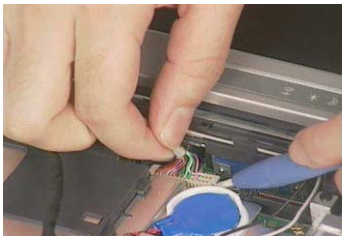
1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. See “Removing the Middle Cover” on page 53
4. See “Removing the Keyboard Metal Support” on page 54
5. See “Removing the Keyboard” on page 54
6. See “Removing the Antennas” on page 57
7. Press the latches on both sides of the socket, and then detach the wireless LAN board.

NOTE: Please ignore this step if your notebook is not equipped with wireless LAN board.

Removing the LCD Module

1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. See “Removing the Middle Cover” on page 53
4. See “Removing the Antennas” on page 57
5. Remove the one screw and disconnect the coaxial cable from the main board.

6. Disconnect the inverter cable from the main board.

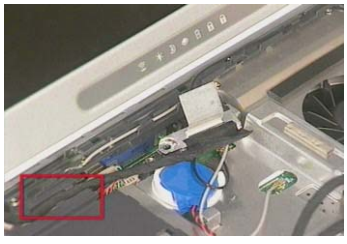


7. Remove the four screws as shown.

8. Remove the two screws from the bottom of the unit.

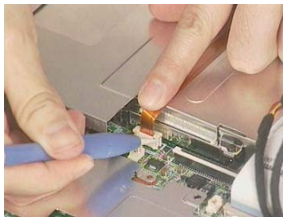
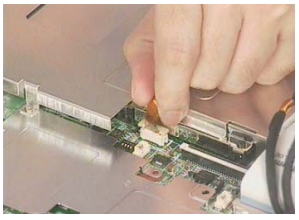
9. Lift up and detach the LCD module.

NOTE: When connecting the inverter cable and coaxial cable back to the unit, please note that the two cables should be routed as shown.

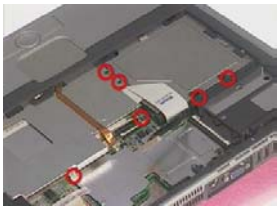


Separating the Upper Case from the Lower Case

1. See “Removing the Battery” on page 47
2. See “Removing the Optical Drive Module” on page 51
3. See “Removing the Hinge Caps” on page 52
4. See “Removing the Middle Cover” on page 53
5. See “Removing the Keyboard Metal Support” on page 54
6. See “Removing the Keyboard” on page 54
7. See “Removing the Keyboard Support Bracket” on page 56
8. See “Removing the LCD Module” on page 59
9. Disconnect the touch pad cable, the cover switch cable by using plastic tweezers.

10. Release the fourteen screws from the bottom of the main unit, and the other seven screws as shown and then remove the upper case from the main unit gently.



Removing the CPU Heat Sink

1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. See “Removing the Middle Cover” on page 53
4. See “Removing the Keyboard Metal Support” on page 54
5. See “Removing the Keyboard” on page 54
6. See “Separating the Upper Case from the Lower Case” on page 61
7. Disconnect the fan cable from the main board, remove the four screws on the CPU heat sink, and then remove the CPU heat sink from the main board.

NOTE: Please follow the order while securing the CPU heat sink with the four screws.

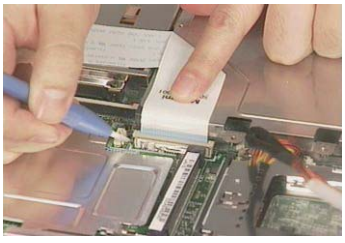
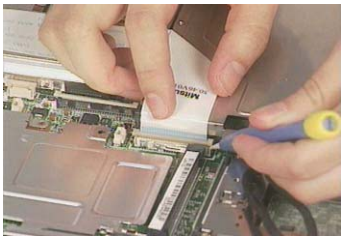
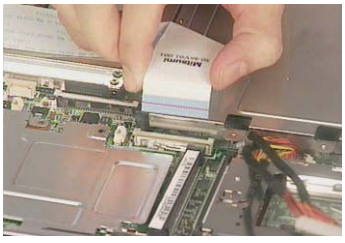
Removing the CPU

1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. See “Removing the Middle Cover” on page 53
4. See “Removing the Keyboard Metal Support” on page 54
5. See “Removing the Keyboard” on page 54
6. See “Separating the Upper Case from the Lower Case” on page 61
7. See “Removing the CPU Heat Sink” on page 62
8. Lift up the CPU lever to release the CPU socket, and then remove the CPU very carefully. Put the CPU lever back to its original position and have it locked well.

NOTE: To install the CPU, please put it back with the triangle mark this side as shown here.

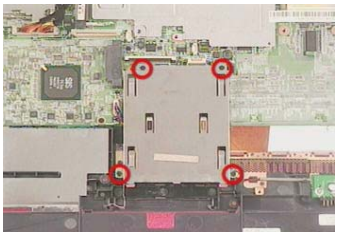
Removing the FDD Module

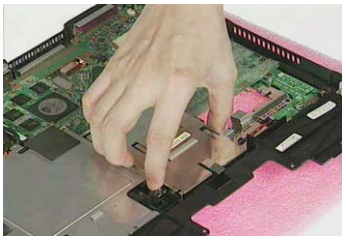
1. See “Removing the Battery” on page 47
2. See “Removing the Optical Drive Module” on page 51
3. See “Removing the Hinge Caps” on page 52
4. See “Removing the Middle Cover” on page 53
5. See “Removing the Keyboard Metal Support” on page 54
6. See “Removing the Keyboard” on page 54
7. See “Removing the Keyboard Support Bracket” on page 56
8. See “Removing the LCD Module” on page 59
9. See “Separating the Upper Case from the Lower Case” on page 61
10. Disconnect the FDD cable from the main board, remove the two screws and detach the FDD module from the main unit.

Removing the HDD Guiding Chassis

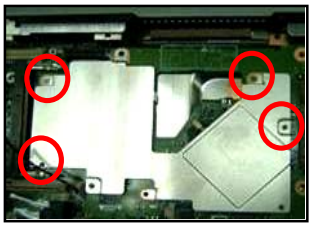
1. See “Removing the Battery” on page 47
2. See “Removing the Optical Drive Module” on page 51
3. See “Removing the Hinge Caps” on page 52
4. See “Removing the Middle Cover” on page 53
5. See “Removing the Keyboard Metal Support” on page 54
6. See “Removing the Keyboard” on page 54
7. See “Separating the Upper Case from the Lower Case” on page 61
8. See “Removing the LCD Module” on page 59
9. See “Separating the Upper Case from the Lower Case” on page 61
10. See “Removing the FDD Module” on page 63
11. Remove the four screws and detach the HDD guiding chassis from the main board.





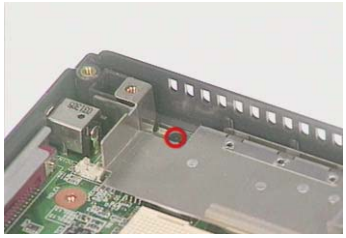
Removing the VGA Thermal Plate

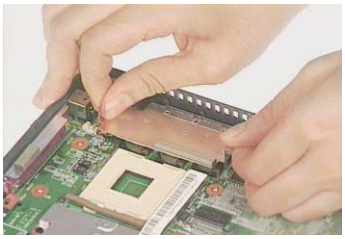
1. See “Removing the Battery” on page 47
2. See “Removing the Optical Drive Module” on page 51
3. See “Removing the Hinge Caps” on page 52
4. See “Removing the Middle Cover” on page 53
5. See “Removing the Keyboard Metal Support” on page 54
6. See “Removing the Keyboard” on page 54
7. See “Removing the Keyboard Support Bracket” on page 56
8. See “Removing the Wireless LAN Board” on page 58
9. See “Removing the LCD Module” on page 59
10. See “Separating the Upper Case from the Lower Case” on page 61
11. Remove the four screws and detach the VGA Thermal Plate from the main board.



Removing the CPU Thermal Plate

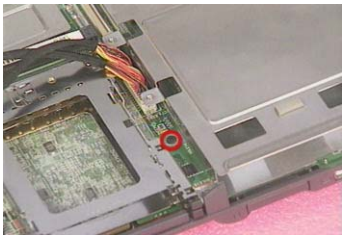
1. See “Removing the Battery” on page 47
2. See “Removing the Optical Drive Module” on page 51
3. See “Removing the Hinge Caps” on page 52
4. See “Removing the Middle Cover” on page 53
5. See “Removing the Keyboard Metal Support” on page 54
6. See “Removing the Keyboard” on page 54
7. See “Removing the Keyboard Support Bracket” on page 56
8. See “Removing the LCD Module” on page 59
9. See “Separating the Upper Case from the Lower Case” on page 61
10. See “Removing the FDD Module” on page 63
11. Remove the one screw and detach the CPU thermal plate from the main unit.





Removing the Optical Drive Bracket

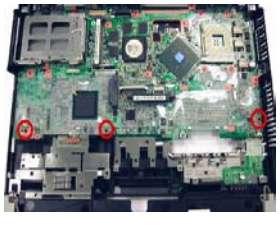
1. See “Removing the Battery” on page 47
2. See “Removing the Optical Drive Module” on page 51
3. See “Removing the Hinge Caps” on page 52
4. See “Removing the Middle Cover” on page 53
5. See “Removing the Keyboard Metal Support” on page 54
6. See “Removing the Keyboard” on page 54
7. See “Removing the Keyboard Support Bracket” on page 56
8. See “Removing the LCD Module” on page 59
9. See “Separating the Upper Case from the Lower Case” on page 61
10. Remove the one screw and detach the CD-ROM bracket from the main unit.

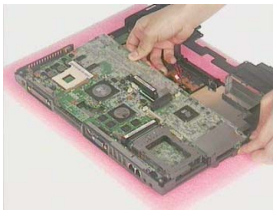


Removing the Main Board

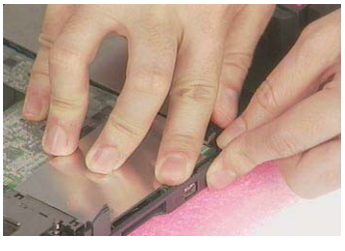
1. See “Removing the Battery” on page 47
2. See “Removing the Hard Disk Drive Module” on page 48
3. See “Disassembling the Optical Drive Module” on page 51
4. See “Removing the Hinge Caps” on page 52
5. See “Removing the Middle Cover” on page 53
6. See “Removing the Keyboard Metal Support” on page 54
7. See “Removing the Keyboard” on page 54
8. See “Removing the Keyboard Support Bracket” on page 56
9. See “Removing the Wireless LAN Board” on page 58
10. See “Removing the LCD Module” on page 59
11. See “Separating the Upper Case from the Lower Case” on page 61
12. See “Removing the FDD Module” on page 63
13. See “Removing the VGA Thermal Plate” on page 64
14. See “Removing the Optical Drive Bracket” on page 65
15. Remove the MMC dummy card from the main unit.

16. Disconnect the speaker cables from the main board.
17. Remove the three screws and detach the main board together from the lower case very carefully.





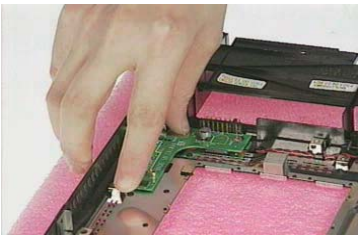
NOTE: While installing the main board to the lower case, pay attention to the IEEE 1394 port, make sure it’s installed well.



.

Removing the DC Charger Board

1. See “Removing the Battery” on page 47
2. See “Removing the Hard Disk Drive Module” on page 48
3. See “Disassembling the Optical Drive Module” on page 51
4. See “Removing the Hinge Caps” on page 52
5. See “Removing the Middle Cover” on page 53
6. See “Removing the Keyboard Metal Support” on page 54
7. See “Removing the Keyboard” on page 54
8. See “Removing the Keyboard Support Bracket” on page 56
9. See “Removing the Wireless LAN Board” on page 58
10. See “Removing the LCD Module” on page 59
11. See “Separating the Upper Case from the Lower Case” on page 61
12. See “Removing the FDD Module” on page 63
13. See “Removing the VGA Thermal Plate” on page 64
14. See “Removing the Optical Drive Bracket” on page 65
15. See “Removing the Main Board” on page 66
16. Remove the two screws, and detach the DC charger board from the lower case.



Removing the Speakers

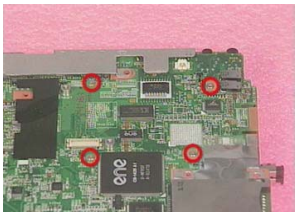
1. See “Removing the Battery” on page 47
2. See “Removing the Optical Drive Module” on page 51
3. See “Removing the Hinge Caps” on page 52
4. See “Removing the Middle Cover” on page 53
5. See “Removing the Keyboard Metal Support” on page 54
6. See “Removing the Keyboard” on page 54
7. See “Removing the Keyboard Support Bracket” on page 56\
8. See “Removing the LCD Module” on page 59
9. See “Separating the Upper Case from the Lower Case” on page 61
10. See “Removing the FDD Module” on page 63
11. See “Removing the Optical Drive Bracket” on page 65
12. Release the speaker cables from the lower case.

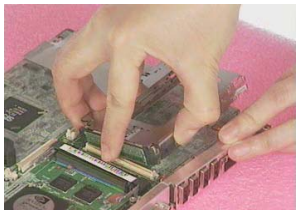
13. Remove the two screws.

14. Detach the two speakers from the lower case.

Removing the PCMCIA Slot

1. See “Removing the Battery” on page 47
2. See “Removing the Hard Disk Drive Module” on page 48
3. See “Disassembling the Optical Drive Module” on page 51
4. See “Removing the Hinge Caps” on page 52
5. See “Removing the Middle Cover” on page 53
6. See “Removing the Keyboard Metal Support” on page 54
7. See “Removing the Keyboard” on page 54
8. See “Removing the Keyboard Support Bracket” on page 56
9. See “Removing the Wireless LAN Board” on page 58
10. See “Removing the LCD Module” on page 59
11. See “Separating the Upper Case from the Lower Case” on page 61
12. See “Removing the FDD Module” on page 63
13. See “Removing the VGA Thermal Plate” on page 64
14. See “Removing the Optical Drive Bracket” on page 65
15. See “Removing the Main Board” on page 66
16. Release the four screws with a screwdriver and detach the PCMCIA slot from the main board.





Disassembling the LCD Module

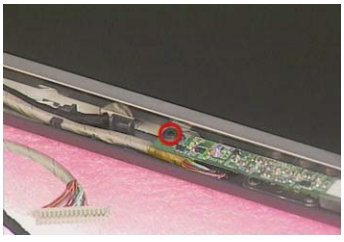
Removing the LCD Bezel

1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. See “Removing the Middle Cover” on page 53
4. See “Removing the LCD Module” on page 59
5. Remove the four screw rubbers and then the four screws from the LCD module.

6. Snap off the LCD bezel carefully and then remove it from the LCD module.

Removing the Inverter Board

1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. See “Removing the Middle Cover” on page 53
4. See “Removing the LCD Module” on page 59
5. See “Removing the LCD Bezel” on page 70
6. Remove the one screw, detach the inverter board from the LCD panel, disconnect the LCD power cable and the inverter cable from the inverter board.

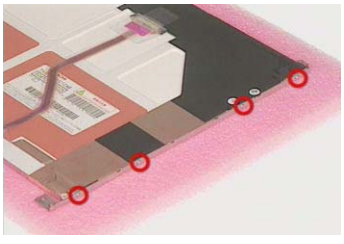
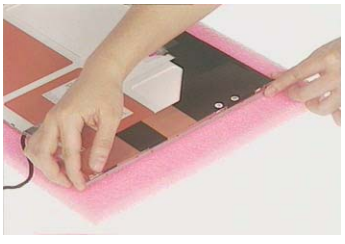
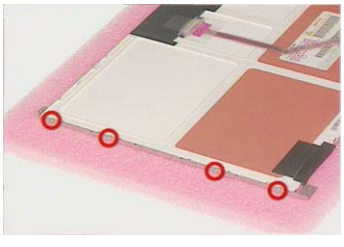


Removing the LCD

1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. See “Removing the Middle Cover” on page 53
4. See “Removing the LCD Module” on page 59
5. See “Removing the LCD Bezel” on page 70
6. See “Removing the Inverter Board” on page 71
7. Remove the four screws on the hinges as shown.

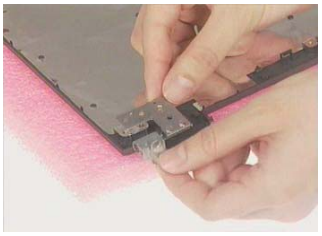
8. Detach the LCD together with the LCD brackets from the LCD panel.

9. Remove the eight screws and then detach the LCD brackets from the LCD.

Removing the LCD Hinges

1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. See “Removing the Middle Cover” on page 53
4. See “Removing the LCD Module” on page 59
5. See “Removing the LCD Bezel” on page 70
6. See “Removing the Inverter Board” on page 71
7. Remove the two screws and detach the two hinges from the LCD panel.



Removing the LCD Coaxial Cable

1. See “Removing the Battery” on page 47
2. See “Removing the Hinge Caps” on page 52
3. See “Removing the Middle Cover” on page 53
4. See “Removing the LCD Module” on page 59
5. See “Removing the LCD Bezel” on page 70
6. See “Removing the Inverter Board” on page 71
7. Remove the tapes, disconnect and remove the coaxial cable from the LCD.

Troubleshooting

Use the following procedure as a guide for computer problems.

NOTE: The diagnostic tests are intended to test only our company's products. Other brand's products, prototype cards, or modified options can give false errors and invalid system responses.

1. Obtain the failing symptoms in as much detail as possible.
2. Verify the symptoms by attempting to re-create the failure by running the diagnostic test or by repeating the same operation.
3. Use the following table with the verified symptom to determine which page to go to.

Symptoms (Verified)	Go To
Power failure. (The power indicator does not go on or stay on.)	"Power System Check" on page 76.
POST does not complete. No beep or error codes are indicated.	"Power-On Self-Test (POST) Error Message" on page 80
POST detects an error and displayed messages on screen.	"Error Message List" on page 80
Other symptoms (i.e. LCD display problems or others).	"Power-On Self-Test (POST) Error Message" on page 80
Symptoms cannot be re-created (intermittent problems).	Use the customer-reported symptoms and go to "Power-On Self-Test (POST) Error Message" on page 80

System Check Procedures

Power System Check

To verify the symptom of the problem, power on the computer using each of the following power sources:

1. Remove the battery pack.
2. Connect the power adapter and check that power is supplied.
3. Disconnect the power adapter and install the charged battery pack; then check that power is supplied by the battery pack.

If you suspect a power problem, see the appropriate power supply check in the following list:

- “Check the Power Adapter” on page 76
- “Check the Battery Pack” on page 76

Check the Power Adapter

Unplug the power adapter cable from the computer. If the power-on indicator does not light up, check the power cord of the power adapter for correct continuity and installation.

If the operational charge does not work, see “Check the Battery Pack” on page 76.

Check the Battery Pack

To check the battery pack, do the following:

From Software:

1. Check out the Power Management in control Panel
2. In Power Meter, confirm that if the parameters shown in the screen for Current Power Source and Total Battery Power Remaining are correct.
3. Repeat the steps 1 and 2, for both battery and adapter.
4. This helps you identify first the problem is on recharging or discharging.

From Hardware:

1. Power off the computer.
2. Remove the battery pack and measure the voltage between battery terminals 1(+) and 6(ground).

To check the battery charge operation, use a discharged battery pack or a battery pack that has less than 50% of the total power remaining when installed in the computer.

If the battery status indicator does not light up, remove the battery pack and let it return to room temperature. Re-install the battery pack.

If the charge indicator still does not light up, replace the battery pack. If the charge indicator still does not light up, replace the DC/DC charger board.

Touchpad Check

If the touchpad doesn’t work, do the following actions one at a time to correct the problem. Do not replace a non-defective FRU:

1. Reconnect the touchpad cables.
2. Replace the touchpad.
3. Replace the main board.

After you use the touchpad, the pointer drifts on the screen for a short time. This self-acting pointer movement can occur when a slight, steady pressure is applied to the touchpad pointer. This symptom is not a hardware problem. No service actions are necessary if the pointer movement stops in a short period of time.

Phoenix BIOS Error Code Messages

The following are the list of messages that Phoenix BIOs can display. Most of them occur during POST. Some of them display information about a hardware device, e.g., and the amount of memory installed. Others may indicate a porblem with a device, such as the way it has been configured. The following lists the explanation of the messages and remedies for reported problems.

NOTE: If your system displays one of the messages marked below with an asterisk (*), write down the message and contact your dealer. If your system change after you make changes in the Setup menus, reset the computer, enter Setup and install Seup defaults or correct the error.

Error Codes	Error Messages
0200	Failure Fixed Disk Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.
0210	Stuck key Stuck key on keyboard
0211	Keyboard Error Keyboard is not working
0212	*Keyboard Controller Failed Keyboard controller failed test. May require replacing keyboard controller.
0213	Keyboard Locked - Unlock Key Switch Unlock the system to proceed
0220	Monitor type does not match CMOS - Run Setup Monitor type not correctly identified on Setup
*0230	Shadow RAM failed at offset: nnnn Shadow RAM failed at offset nnnn of in the 64k block at which the error was detected.
*0231	System RAM failed at offset: nnnn System RAM failed at offset nnnn of in the 64k block at which the error was detected.
*0232	Extended RAM failed at offset: nnnn Extended memory not working or not configured properly at offset nnnn.
0250	System battery is dead - Replace and run setup The CMOs clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.
0251	System CMOS checksum bd - Default configuration used System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS default installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.
*0260	System Time Error The timer test failed. Requires repair of system board
*0270	Real Time Clock Error Real-Time Clock fail BIOS hardware test. May require board repair.
0271	Check date and time settings BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991 - 2099)
0280	Previous Boot Incomplete - Default Configuration used Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of **wait states,** improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the wait state configuration is correct. This error is cleared the next time the system is booted.

Error Codes	Error Messages
0281	Memory Size found by POST differed from CMOS Memory size found by POST differed from CMOS
02B0	Diskette Drive Error
02B1	Diskette Drive B Error
02B2	Incorrect Drive A type - run Setup Type of floppy drive A: Not correct
02B3	Incorrect Drive B Type - run Setup Type of floppy Drive A: not correctly identified in Setup.
02B3	Incorrect Drive B Type - run Setup Type of floppy drive B: not correctly identified in Setup.
02D0	System cache error - Cache disabled RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.
02F0	CPU ID: CPU socket number for Multi-Purpose error.
*02F4	EISA CMOS not writeable Server BIOS 2 test error: Cannot write to EISA CMOS.
*02F5	DMA Test Failed Server BIOS 2 test error: Cannot write to extended DMA (Direct Memory Access) registers.
*02F6	Software NMI Failed Server BIOS 2 test error: Cannot generate software NMI (Non- Maskable Interrupt)
*02F7	Fail-Safe Timer NMI Failed Server BIOS 2 test error: Fail-Safe timer takes too long.
	Device Address Conflict Address conflict for specified *device*
	Allocation Error for: *device* Run ISA or EISA Configuration Utility to resolve resource conflict for the specified *device.*
	CD ROM Drive CD ROM Drive identified
	Entering Setup Starting Setup program
	*Failing Bits: *nnnn* The hex number *nnnn* is a map of the bits at the RAM address which failed the memory test. Each one (1) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset of the failure in System, Extended, os Shadow memory.
	Fixed Disk *n* Fixed disk *n (0-3)* identified.
	Invalid System Configuration Data Problem with NVRAM (CMOS) data.
	I/O device IRQ Conflict I/O device IRQ conflict error
	PS/2 Mouse Boots Summary Screen PS/2 Mouse installed
	nnnn KB Extended RAM Passed Where *nnnn* is the amount of RAM in kilobytes successfully tested.

Error Codes	Error Messages
	nnnn Cache SRAM Passed *Where nnnn* is the amount of shadow RAM in kilobytes successfully tested.
	nnnn KB Shadow RAM Passed Where nnnn is the amount of shadow RAM in shadow in kilobytes successfully tested.
	nnnn KB system RAM Passed Where nnnn is the amount of shadow RAM in kilobytes successfully tested.
	One or more I20 Block Storage Devices were excluded from the Setup Boot Menu. There was not enough room in the IPL table to display all installed I_2O bloc storage devices.
	Operating System Not Found Operating system cannot be located on either drive A.: or drive C: Enter Setup and see if fixed disk and drive A are properly identified.
	*Parity check 1 *nnnn* Parity error found in the system bus. BIOS attempts to locate the address and its display. Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.
	Parity check 2 *nnnn* Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot located the address, it displays????.
	Press <F1> to resume, <F2> to Setup, for previous Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to Enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an **Option ROM**, i.e., an add-on card). Write down and follow the information shown on the screen.
	Press <F2> to enter Setup Optional message displayed during POST. Can be turned off in Setup.
	PS/2 Mouse PS/2 mouse identified
	Run the I2O Configuration Utility One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility. (e.g. the SAC Utility)
	System BIOS Shadowed System BIOS copied to shadow RAM
	UMB upper limit segment address: *nnnn* Displays the address nnnn of the upper limit of U**pper Memory Blocks,** Indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.
	Video BIOS Shadowed Video BIOS successfully copied to shadow RAM

Power-On Self-Test (POST) Error Message

The POST error message index lists the error message and their possible causes. The most likely cause is listed first.

NOTE: Perform the FRU replacement or actions in the sequence shown in FRU/Action column, if the FRU replacement does not solve the problem, put the original part back in the computer. Do not replace a non-defective FRU.

This index can also help you determine the next possible FRU to be replaced when servicing a computer.

If the symptom is not listed, The following lists the error messages that the BIOS displays on the screen and the error symptoms classified by function.

NOTE: Most of the error messages occur during POST. Some of them display information about a hardware device, e.g., the amount of memory installed. Others may indicate a problem with a device, such as the way it has been configured.

NOTE: If the system fails after you make changes in the BIOS Setup Utility menus, reset the computer, enter Setup and install Setup defaults or correct the error.

Index of Error Messages

Error Message List

Error Messages	FRU/Action in Sequence
Failure Fixed Disk	Reconnect hard disk drive connector. “Load Default Settings” in BIOS Setup Utility. Hard disk drive Main Board
Keyboard locked - Unlock key switch	Unlock external keyboard
Monitor type does not match CMOS - Run Setup	Run “Load Default Settings” in BIOS Setup Utility.
Shadow RAM Failed at offset: nnnn	BIOS ROM Main Board
System RAM Failed at offset: nnnn	DIMM Main Board
Extended RAM Failed at offset: nnnn	DIMM Main Board
System battery is dead - Replace and run Setup	Replace RTC battery and Run BIOS Setup Utility to reconfigure system time, then reboot system.
System CMOS checksum bad - Default configuration used	RTC battery Run BIOS Setup Utility to reconfigure system time, then reboot system.
System timer error	RTC battery Run BIOS Setup Utility to reconfigure system time, then reboot system. Main Board
Real time clock error	RTC battery Run BIOS Setup Utility to reconfigure system time, then reboot system. Main Board
Previous boot incomplete - Default configuration used	Run “Load Default Settings” in BIOS Setup Utility. RTC battery Main Board
Memory size found by POST differed from CMOS	Run “Load Default Settings” in BIOS Setup Utility. DIMM Main Board

Error Message List

Error Messages	FRU/Action in Sequence
Diskette drive A error	Check the drive is defined with the proper diskette type in BIOS Setup Utility
Incorrect Drive A type - run SETUP	Check the drive is defined with the proper diskette type in BIOS Setup Utility
System cache error - Cache disabled	Main Board
CPU ID:	Main Board
DMA Test Failed	DIMM Main Board
Software NMI Failed	DIMM Main Board
Fail-Safe Timer NMI Failed	DIMM Main Board
Device Address Conflict	Run “Load Default Settings” in BIOS Setup Utility. RTC battery Main Board
Allocation Error for device	Run “Load Default Settings” in BIOS Setup Utility. RTC battery Main Board
Failing Bits: nnnn	DIMM BIOS ROM Main Board
Fixed Disk n	None
Invalid System Configuration Data	BIOS ROM Main Board
I/O device IRQ conflict	Run “Load Default Settings” in BIOS Setup Utility. RTC battery Main Board
Operating system not found	Enter Setup and see if fixed disk and drive A: are properly identified. Diskette drive Hard disk drive Main Board

Index of Symptom-to-FRU Error Message

Error Message List

No beep Error Messages	FRU/Action in Sequence
No beep, power-on indicator turns off and LCD is blank.	Power source (battery pack and power adapter). See “Power System Check” on page 76. Ensure every connector is connected tightly and correctly. Reconnect the DIMM. LED board. Main Board.
No beep, power-on indicator turns on and LCD is blank.	Power source (battery pack and power adapter). See “Power System Check” on page 76. Reconnect the LCD connector Hard disk drive LCD inverter ID LCD cable LCD Inverter LCD Main Board
No beep, power-on indicator turns on and LCD is blank. But you can see POST on an external CRT.	Reconnect the LCD connectors. LCD inverter ID LCD cable LCD inverter LCD Main Board
No beep, power-on indicator turns on and a blinking cursor shown on LCD during POST.	Ensure every connector is connected tightly and correctly. Main Board
No beep during POST but system runs correctly.	Speaker Main Board

LCD-Related Symptoms

Symptom / Error	Action in Sequence
LCD backlight doesn't work LCD is too dark LCD brightness cannot be adjusted LCD contrast cannot be adjusted	Enter BIOS Utility to execute “Load Setup Default Settings”, then reboot system. Reconnect the LCD connectors. Keyboard (if contrast and brightness function key doesn't work). LCD inverter ID LCD cable LCD inverter LCD Main Board
Unreadable LCD screen Missing pels in characters Abnormal screen Wrong color displayed	Reconnect the LCD connector LCD inverter ID LCD cable LCD inverter LCD Main Board
LCD has extra horizontal or vertical lines displayed.	LCD inverter ID LCD inverter LCD cable LCD Main Board

Indicator-Related Symptoms

Symptom / Error	Action in Sequence
Indicator incorrectly remains off or on, but system runs correctly	Reconnect the inverter board Inverter board Main Board

Power-Related Symptoms

Symptom / Error	Action in Sequence
Power shuts down during operation	Power source (battery pack and power adapter). See “Power System Check” on page 76. Battery pack Power adapter Hard drive & battery connection board Main Board
The system doesn’t power-on.	Power source (battery pack and power adapter). See “Power System Check” on page 76. Battery pack Power adapter Hard drive & battery connection board Main Board
The system doesn’t power-off.	Power source (battery pack and power adapter). See “Power System Check” on page 76. Hold and press the power switch for more than 4 seconds. Main Board
Battery can’t be charged	See “Check the Battery Pack” on page 76. Battery pack Main Board

PCMCIA/Smart Card-Related Symptoms

Symptom / Error	Action in Sequence
System cannot detect the PC Card (PCMCIA)	PCMCIA/Smart Card slot assembly Main Board
System cannot detect the Smart Card	Smart Card PCMCIA/Smart Card slot assembly Main Board
PCMCIA/Smart Card slot pin is damaged.	PCMCIA/Smart Card slot assembly

Memory-Related Symptoms

Symptom / Error	Action in Sequence
Memory count (size) appears different from actual size.	Enter BIOS Setup Utility to execute “Load Default Settings, then reboot system. DIMM Main Board

Speaker-Related Symptoms

Symptom / Error	Action in Sequence
In Windows, multimedia programs, no sound comes from the computer.	Audio driver Speaker Main Board
Internal speakers make noise or emit no sound.	Speaker Main Board

Power Management-Related Symptoms

Symptom / Error	Action in Sequence
The system will not enter hibernation	Keyboard (if control is from the keyboard) Hard disk drive Main Board
The system doesn't enter hibernation mode and four short beeps every minute.	Press Fn+F2 and see if the computer enters hibernation mode. Touchpad Keyboard Hard disk connection board Hard disk drive Main Board
The system doesn’t enter standby mode after closing the LCD	LCD cover switch Main Board
The system doesn't resume from hibernation mode.	Hard disk connection board Hard disk drive Main Board
The system doesn't resume from standby mode after opening the LCD.	LCD cover switch Main Board
Battery fuel gauge in Windows doesn’t go higher than 90%.	Remove battery pack and let it cool for 2 hours. Refresh battery (continue use battery until power off, then charge battery). Battery pack Main Board

Peripheral-Related Symptoms

Symptom / Error	Action in Sequence
System configuration does not match the installed devices.	Enter BIOS Setup Utility to execute “Load Default Settings”, then reboot system. Reconnect hard disk/CD-ROM/diskette drives.
External display does not work correctly.	Press Fn+F3, LCD/CRT/Both display switching Main Board
USB does not work correctly	Main Board
Print problems.	Ensure the “Parallel Port” in the “Onboard Devices Configuration” of BIOS Setup Utility is set to Enabled. Onboard Devices Configuration Run printer self-test. Printer driver Printer cable Printer Main Board
Serial or parallel port device problems.	Ensure the “Serial Port” in the Devices Configuration” of BIOS Setup Utility is set to Enabled. Device driver Device cable Device Main Board

Keyboard/Touchpad-Related Symptoms

Symptom / Error	Action in Sequence
Keyboard (one or more keys) does not work.	Reconnect the keyboard cable. Keyboard Main Board
Touchpad does not work.	Reconnect touchpad cable. Touchpad board Main Board

Modem-Related Symptoms

Symptom / Error	Action in Sequence
Internal modem does not work correctly.	modem board Main Board

NOTE: If you cannot find a symptom or an error in this list and the problem remains.

LAN-Related Symptoms

Symptom / Error	Action in Sequence
Internal LAN does not work correctly.	LAN board Main Board

Wireless LAN-Related Symptoms

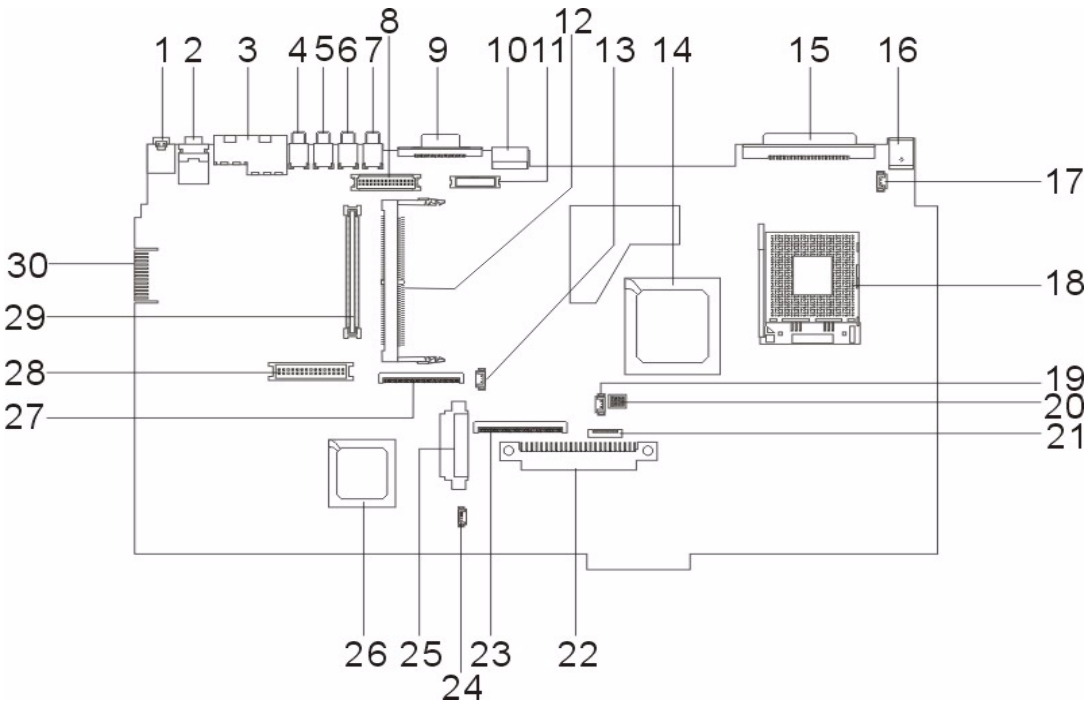
Symptom / Error	Action in Sequence
Internal wireless LAN does not work correctly.	right or left antenna kits wireless LAN board Main Board

Index of PQA Diagnostic Error Code, Message

Error Code	Message	Action in Sequence
16XXX	Backup battery error	Backup battery
01XXX	CPU or main board error	Reload BIOS default setting. Main Board
02XXX	Memory error	DIMM Main Board
03XXX	Keyboard error	Reset Keyboard Keyboard Main Board
04XXX	Video error	Main Board
05XXX	Parallel Port error	Main Board
06XXX	Serial port or main board error	Main Board
07XXX	Diskette drive error	Diskette drive Main Board
08XXX	Hard disk error	Reload BIOS default setting Hard disk Main Board
09XXX	CD-ROM error	Reset CD-ROM cable CD-ROM drive Main Board
10XXX	Co-processor error	Main Board
11XXX	Pointing device error	Reset Keyboard Keyboard Main Board
12XXX	Cache test error	Main Board

Jumper and Connector Locations

Top View



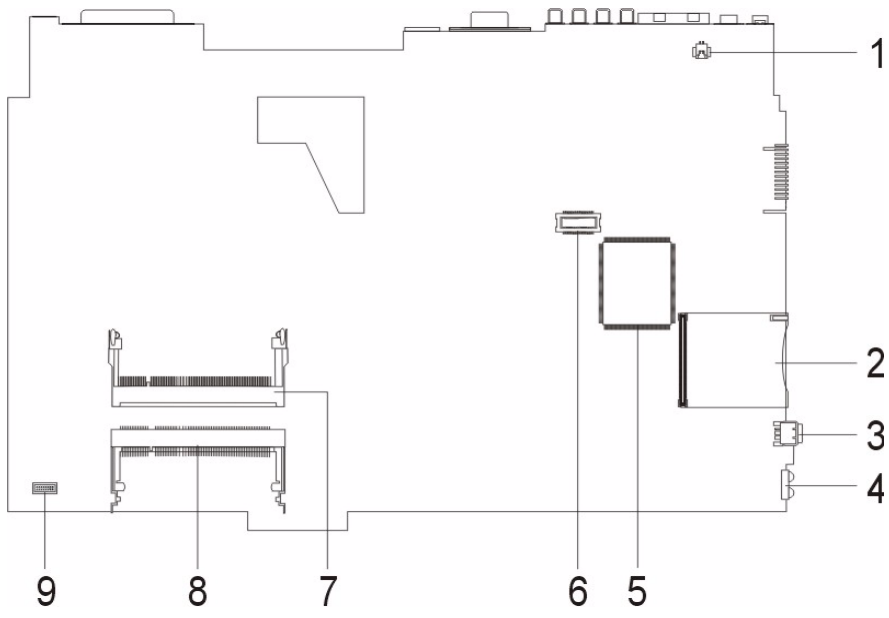
PCB: 03241-1

1	LIN1	Line-in connector	16	DCIN1	AC adapter connector
2	LOUT1	Line-out connector	17	CN2	Lid cover switch cable connector
3	RJ56	Modem port (left) Network port (right)	18	U20	CPU socket
4	USB1	USB port	19	FAN1	Fan connector
5	USB2	USB port	20	SW1	SW1 Setting (Please refer to below)
6	USB3	USB port	21	TPAD1	Touch pad cable connector
7	USB4	USB port	22	HDD1	Hard Diskette Drive connector
8	INV1	Inverter cable connector	23	KB1	Keyboard connector
9	CRT1	External monitor port	24	SPK1	Speaker cable connector
10	TV1	TV-out connector	25	IDE2	Optical drive connector
11	LCD1	LCD coaxial cable connector	26	U61	South Bridge (SiS963)
12	MINI1	Mini-PCI connector	27	FDD1	Floppy diskette drive connector
13	RTC1	RTC battery connector	28	CN4	Launch board cable connector
14	U27	North Bridge (SiS M661FX)	29	CBUS1	PCMCIA cardbus connector
15	PRT1	Parallel port	30	CN3	Golden Finer (Debug Board)

SW1 Settings

	ON	OFF
Check Password	Enable	Disable
BOOT BLOCK	Enable	Disable
No use	X	X
No use	X	X

Bottom View



1	CN1	Modem cable connector	6	MDC1	Modem board connector
2	M_Bay1	SD/MS/MMC 3-in-1 slot	7	DM1	Memory socket 1
3	1394_1	1394 connector	8	DM2	Memory socket 2
4	IR1	FIR	9	CN6	DC-DC charge board connector
5	U36	CardBus ENE CB1420			

FRU (Field Replaceable Unit) List

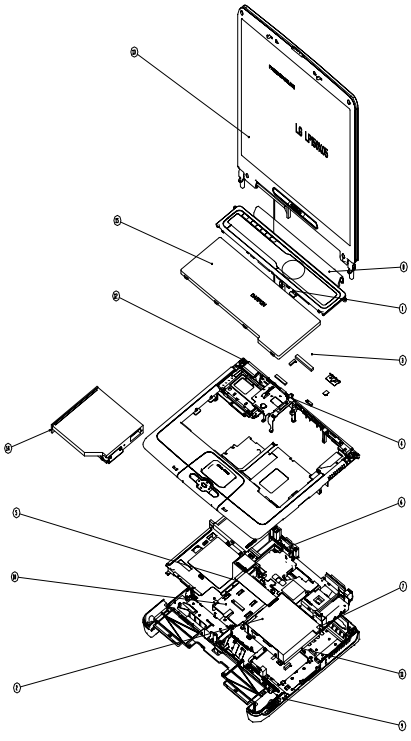
This chapter gives you the FRU (Field Replaceable Unit) listing in global configurations of the product. Refer to this chapter whenever ordering for parts to repair or for RMA (Return Merchandise Authorization).

IMPORTANT: Please note WHEN ORDERING FRU PARTS, that you should check the most up-to-date information available on your regional web or channel. For whatever reasons a part number change is made, it will not be noted in the printed Service Guide. For AUTHORIZED SERVICE PROVIDERS, your office may have a DIFFERENT part number code to those given in the FRU list of this printed Service Guide. You MUST use the local FRU list provided by your regional office to order FRU parts for repair and service of customer machines.

NOTE: To scrap or to return the defective parts, you should follow the local government ordinance or regulations on how best to dispose it, or follow the rules set by your regional office on how to return it.

NOTE: The number indicates the location shown on exploded diagram or “NS” indicates “Not shown” on it.

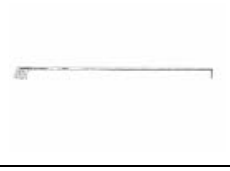
Exploded Diagram



Picture	No.	Partname	Description
Adapter			
	NS	ADAPTER 3PIN 120W LISHIN	ADPT 3P 120W LISHIN
LCD			
	13	LCD 15” TFT XGA AUO B150XG01 V.2	LCD 15” XGA TFT AU/B150G01 V.2
Main Board			
	2	MAINBOARD K3V W/O CPU W/LAUNCH BOARD CABLE & MODEM & MODEM CABLE & RTC BATTERY	K3V W/O CPU M/B DIP
Boards			
	NS	DC CHARGE BOARD	K2P DC-DC CHARGER BD-1
	NS	TOUCHPAD BOARD	TOUCHPAD SYNAPTICS/TM41PDS357
	NS	LAUNCH BOARD	K2P LAUNCH BOARD-1
	NS	INVERTER BOARD 14”/15”	INVERTER 14/15” T62I194.12

Picture	No.	Partname	Description
	NS	MODEM BOARD ASKEY	MODEM MDC ASKEY 1456VQL4A(INT)
Battery			
	NS	RTC BATTERY	BATTERY RTC_100MM
	NS	BATTERY LI 8CELL 2.2AH SANYO W/O COVER	ASYBTY PACKLI+8C2.2AHSANYO
COMBO Drive			
	NS	COMBO DRIVE 24X LITEON LSC-24082KK3/JA	COMBOLITEON/LSC-24082KK3/JA
FDD/FLOPPY Disk Drive			
	NS	FDD 1.44 PANASONIC JU-226A033 REV.T	FDD 1.44 PANA/JU-226A033 REV.T
Heat Sink			
	NS	CPU HEATSINK	ASSY CPU HEAT-PIPE
	6	VGA THERMAL PLATE	ASSY NB THERMAL PLATE K3V
Cables			

Picture	No.	Partname	Description
	NS	INVERTER CABLE	C.A. INVERTER CABLE YUHINA
	NS	FDD CABLE	CABLE FDD FFC
	NS	LCD COAXIAL CABLE XGA 15”	CABLE COAXIAL XGA FVC K3U
	NS	LAUNCH BOARD CABLE	CABLE LAUNCH K2P
	NS	TOUCHPAD CABLE	CABLE TOUCH PAD FPC
	NS	COVER SWITCH CABLE 2PIN 50MM 2CONNECTOR	C.A. 2P 2C 50MM SUSPEND SWITCH
	NS	MODEM CABLE 2PIN 2CONNECTOR 55MM	WIRE MDC 2CONN 2P 55MM
Case/Cover/Bracket Assembly			
	NS	LCD BRACKET 15” LEFT	BRACKET 15” LCD L K3D

Picture	No.	Partname	Description
	NS	LCD BRACKET 15” RIGHT	BRACKET 15” LCD R K3D
	NS	LCD PANEL W/HINGE	ASSY PANEL K3V-A
	NS	HINGE PACK 15”	HINGE PACK 15”
	NS	LCD BEZEL W/ICON PLATE	ASSEMBLY BEZEL 15” K3V-A
	NS	FDD BRACKET	BRACKET FDD K3D
	NS	CD-ROM SUPPORT BRACKET	ASSY CD-ROM SUPPORT K2P
	NS	HDD BRACKET	ASSEMBLY HDD BRACKET K3D

Picture	No.	Partname	Description
	8	MIDDLE COVER W/LAUNCH BOARD & LOGO	ASSY MIDDLE COVER K3V-A
	4	KEYBOARD SUPPORT BRACKET	ASSY NEW KB SUPPORT K2P
	1	KEYBOARD BRACKET METAL	METALFIXKBK3D
	NS	HINGE CAP RIGHT	CAP R HINGE K3D
	NS	HINGE CAP LEFT	CAP L HINGE K3D
	9	LOWER CASE W/DIMM COVER & MODEM COVER & SPEAKER	ASSY LOWER CASE K3V-A
	NS	MODEM COVER W/SCREWS	ASSEMBLY MDC DOOR K3D

Picture	No.	Partname	Description
	NS	DIMM DOOR W/SCREW	ASSEMBLY DIMM DOOR K3D
	12	UPPER CASE W/COVER SWITCH CABLE	ASSY UPPER CASE K3V-A
	NS	PCMCIA DUMMY CARD	CARDMMCDUMMY
	NS	BATTERY COVER	COVERBATTERYK3D
	10	HDD CHASSIS	ASSY CHASSIS HDD GUIDE
	NS	TOUCHPAD BRACKET	ASSY TOUCH PAD SUPPORT K2P
	7	CPU THERMAL PLATE K	ASSY CPU THERMAL PLATE K3V

Picture	No.	Partname	Description
	5	OPTICAL BRACKET	BRACKET CD-ROM K3D
	NS	DIMM COVER	ASSYDIMMDOORK3V
Speakers			
	NS	SPEAKER	SPEAKER YUHINA

Picture	No.	Partname	Description
Miscellaneous			
	NS	SCROLL KEY KNOB	KNOB SCROLL KEY K3V-A
	NS	SIDE KEY RIGHT	KNOB SIDE KEY RIGHT K3V-A
	NS	SIDE KEY LEFT	KNOB SIDE KEY LEFT K3V-A
	NS	LCD SCREW RUBBER	RUBBER LCD CUSHION K3D
	NS	LCD SCREW RUBBER	RUBBER LCD SCREW K3D
	NS	RUBBER FOOT	RUBBER FOOT LOWER CASE
Screws			

Picture	No.	Partname	Description
	NS	SCREW	SCRW HEX NYL I#R-40/O#4-40 L5.5
	NS	SCREW	SCREW MACH PAN NYLOK M2.0*10 NI
	NS	SCREW	SCREW CPU SCREW FORCE 5KGS
	NS	SCREW	SCREW M2*3 NYLON 1 JMCPC-420325
	NS	SCREW	SCREW M2.5X6
	NS	SCREW	SCREW WAFER NYLOK NI 2ML3
	NS	SCREW	SCREW M2*4 WAFER NI

Picture	No.	Partname	Description
	NS	SCREW	SCREW M2.5*3 WAFER NI
	NS	SCREW	SCREW M2.5*4L NI
	NS	SCREW	SCREW M3X4(86.9A524.4R0)
	NS	SCREW	SRW M2.5*8L B/ZN NYLOK 700
	NS	SCREW	SCREW (86.9A352.4R0)

Test Compatible Components

This computer's compatibility is tested and verified by the internal testing department. All of its system functions is tested under Windows XP.

Refer to the following lists for components, adapter cards, and peripherals which have passed these tests. Regarding configuration, combination and test procedures, please refer to the K3V Compatibility Test Report released by the Mobile System Testing Department.

Microsoft Windows XP Environment Test

Item	Specifications
Processor	P4P 3.0G P4P 2.6G
Memory (DDR-DIMM)	SDIMM 512MB DDR333 HYS64D6402 SODIMM 256MB HYS64D32020GDL-7-B
LCD	15” XGA TFT N150X3-L05 15” XGA TFT AU/B150XG01
Hard Disk Drive	80GB/TDMT MK8025GAS 60GB/Toshiba MK6021GAS
Basic PC Card List	
LAN Card	3Com EtherLink III 3C589D (PEN-050) IBM EtherJet CardBus Adapter 10/100 (PEN-936) Intel EtherExpress Pro/100 Mobile Adapter MBLA3200 (PEN-906~910) Xircom CardBus Ethernet 10/100 32Bit CBE - 10/100BTX (PEN-911~912)
Modem Card	USR Megahertz 56K PC Card Modem (PFM-044) Xircom CreditCard Modem 56 (PFM-079~081 IBM 56K Double Jack Modem 02K4197 (PFM-059-1~2)
Combo Card	3Com Megahertz 10/100 LAN + 56K Modem PC Card KB-04-002 (PCB-041) Xircom RealPort CardBus Ethernet 10/100 + Modem 56 RBEM5G-100 (PCB-053-054)
ATA Card	IBM MicroDrive 340MB PMR-02-03~04 PMR-036 IBM MicroDrive 1G PMR-051~052 Iomega Click! 40MB PMR 045 Sony Memory Stick 64 MB PMR-062 Sandisk Compact Flash Card 20MB Apacer SD Flash Card 128MB CARD-05 Apacer 128MB Memory Stick CARD-065
USB 2.0 Card (*1)	Apricorn EZ-USB 2.0 CardBus PC Card (Pen-934) DTK USB 2.0 Port CardBus Host Controller PUC-102 (Usb-Cb-03 & Usb-Cb-02) Adaptec USB 2 Connect Usb-Cb-01) IOGEAR Cardbus Card PC Card USB 2.0 (USB-CB-05) (USB-CB-06)
1394 Card	Buffalo 1394 Interface CardBus IFC-ILCB/DV (IEEE-01~03) I-O Data 1394 Interface CardBus CB1394/DVC(IEEE-06~07) Pixela 1394 CardBus PC Card PIX-PCMC/FW1 (IEEE-04~05)
SCSI Card	Adaptec 1480A or B SCSI CB 1680880A/B (PIO-001~006) NewMedia Bus Toaster SCSI II (PIO-007~008)
Wireless LAN Card	Intel Pro/Wireless LAN PC Card 2011B (PEN-096) Proxim Skyline 802.11a Cardbus Card (PEN-937~938) Cisco Aironet 350 Series Wireless LAN Card (Wireless-011~012) NeWeb Wireless Lan Card 802.11b (Wireless-013~014) Cisco Wireless Lan Card 802.11a (Wireless-015~016)
BlueTooth Card	IBM Community Bluetooth PC Card (Bule-04) Toshiba Bluetooth PC Card PABTC001 (Bule-02)
ISDN	US Robotics Megahertz 128K ISDN Card 405R17T7117M (PIS-002) IBM ISDN Card 05K3320 (PFM-058)
Token Ring Card	IBM Token ring 16/4 Adapter II (PTR-004~008)
I/O Peripheral	

Item	Specifications
I/O - External CRT	Acer 211c 21” MT-01~034 ViewSonic PF790, 19” MT-01-039 Acer FP751 17” TFT LCD MT-01-036 IBM Color TFT LCD 14” 9514-B03 (MT-01-028) Compaq Color Monitor V70 (MT-01-003) Net Color Monitor 20” MT (01-006) Mozo 17” TFT LCD (DVI) MT-01-30)
I/O - Projector	NEC MultiSync MT-1040
I/O - Legacy(PS2 / Serial) Keyboard / Mouse	IBM 101 Key Keyboard KB-454 (KB-01-013) IBM 109 Key Keyboard 5576-B06 (KB-01-017) Acer PS2 Keyboard 6311-C4C (KB-01-21~24) Acer KB-101A GQ87EEKB-101A (KB-01-004) IBM Numeria KeyPad III 79F6408 (KB-01-016) IBM Numeric KeyPad (KB-01-016) Acer Mouse M-S34 (MO-02-003) IBM PS2 Mini Mouse 07G0033 (MO-02-036) IBM PS2 Mouse 12J3615 (MO-02-037) Logitech Cordless MouseMan Wheel PS2 interface (MO-03-057~58) Logitech Serial Mouse M-M35 (MO-01-031) Microsoft InteliMouse PS2 interface (MO-02-022) Microsoft InteliMouse Optical Ps2 interface X05-48796 (MO-03-056) Logitech First Mouse Three Button Serial Mouse
I/O - Parallel (Printer/Scanner)	Canon BJC-600J (JP OS only) PT-02-005 Epson Stylus Color 740 Parallel Interface PT-02-012 HP DeskJet 890C PT-01-004 HP DeskJet 880C Parallel interface PT-02-013 HP LaserJet 6MP PT-01-015 HP LaserJEt 2200 PT-02-014
I/O - IR Printer	HP LaserJet 6MP use IR PT-01-015 HP LaserJet 2200 use IR PT-02-014
I/O - USB Keyboard/Mouse	Chicony USB Keyboard KU-8933 (KB-04-001~002) Microsft Natural Keyboard Pro (KB-04-013) Acer Aspire USB Mouse M-UB48(MO-03-040) Logitech USB MouseMan Wheel USB interface Logitech Coreless MouseMan Wheel USB interface (MO-03-058) Logitech USB Wheel Mouse M-BB48 (MO-03-050) Microsoft IntelliMouse Optical USB Interface (MO-03-056)
I/O - USB Printer/Scanner	Epson Stylus Color 740 USB interface PT-02-012 HP DeskJet 880C USB interface PT-02-013 Canon CanonScan D1250 (USB 2.0, JP OS only) (SC-009) HP ScanJet 3300C Color Scanner MY97712194 (SC-01-004) HP Deskjet 995C (usb interface)
I/O - USB Speaker/Joystick	JS USB Digital Speaker SP-01-017~18 Panasonic USB Speaker EAB-MPC57USB SP-01-023 AIWA Multimedia Digital Speaker SC-UC78 (SP-01-019) Microsoft Side Winder Precision Pro Joystick 326-00069 (JK-01-002) Logitech WingMan Rumble Pad G-UA3 (JK-01-010~11)
I/O - USB Camera	Intel Easy PC Camera A20953-001 (CM-01-022) Logitech QuickCam Express Internet (CM-01-019-2) Logitech QuickCam Home PC Video Camera VCAM-U1(CM-01-018-2) Orange Micro USB 2.0 Web Cam (CM-02-04)

Item	Specifications
I/O - USB Storage Drive	Logitec CDRW + DVDROM combo USB interface RW-12 Iomega USB Zip 250MB ZIP-01-002 Plextor Burn-proof CDRW (usb 2.0) PX-S88TU CW-03 Fujitsu MO-1300 1.3G (usb 2.0) Fujitsu 20G HDD (usb 2.0) (*2) t4988618913874 USB-HD-01 Sony DVDROM (usb 2.0) USB-RW-01 IO-Data DVDROM (usb 2.0) USB-RW-02 PQI 6 IN 1 Flash Card Reader/Writer(*1) USB-03-03 Sandisk Card Reader 6 In 1 (Usb 2.0) USB-03-04)
I/O - USB Flash Drive	Apacer USB Handy Drive 32/128MB USB-03-004~008 Apacer USB Handy Driver 256/512MB USB-03-006~010 Sony Memory Key 128MB USB-03-011~012 Dell Memory Key 64MB PMR-069~8
I/O - USB Hub	Belkin 4 Port USB Hub F5u001 HUB -02-015 Eizo I Station USB Hub DH-1401 HUB-02-012~13 Elecom USB Hub 4 Port UH-4S HUB-02-014 Sanwa USB Hub 4 Port HUB-010~011 4 Port Hub (usb 2.0) UH-204 HUB-02-02 Corega Wireless LAN USB Stick11 (usb 1.1) *1 t4988618913874 USB-HD-01
I/O - 1394 Storage Drive	Logitec Fireware CDRW + DVD-ROM Combo I-O Data Fireware HD I.LINK 30GB HAD-130G HD-01-005 VST-Fireware HD FW1260 HD-01-003 Maxtor External Storage 80GB 1394 HDD HD-01-009 Smartdick Firelite Hard Devies for 1394 (*2) HD-01-010~11)
I/O - 1394 Camera	Sony DV DCR-TRV10 CM-01-005 Orange Micro 1394 Web Cam(*1) CM-02-02~03
I/O - 1394 Hub	ADS PYRO 1394 HUB HUB-009
I/O - Access Point 802.11b	Hitachi DC-CN3300 RW-12 Lucent RG-1000 ZIP01-002 Lucent WavePoint-II PX-S88TU CW-03 Cisco Aironet 350 Wireless-010 Orinoco AP-500 Wireless-001
I/O - Access Point 802.11a/b	Intel Dual Pro/Wireless 5000 Wireless-008
I/O - Access Point 802.11a	Intel Pro/Wireless 5000 Wireless-009
I/O - TV (NTSC/PAL)	Sony 29” Trinitron KV-XA29N90
I/O - Bluetooth Device	Sony Ericksson Wireless Headset BLUE-08 HP Deskjet 995C (bluetooth interface) PT-03-016 X Bridge Bluetooth Access Point BT300 PT-03-016
I/O - Multimedia Card	Pretec Multimedia card 64MB PMR-055 Sandisk Multimedia card 32MB PMR - 056~7
I/O - SD Card	Pretec SD card 64MB RW-12 Apacer SD card 128MB RW-12 Transcend SD card 32MB RW-12
I/O - Memory Stick(*1)	Sony MEmory stick 64MB PMR-040~042 Sandisk Memory stick 128MB PMR-059 Apacer Memory stick 128MB PMR-065
I/O - Smart Media(*1*2)	Sandisk Smart media 64MB PMR-069 Apacer Smart media 64MB PMR-066

A

AC Adapter 26
ACPI 1.0a 17
APM 1.2 17
Audio 22, 24

B

Battery 25
Battery Pack 47
battery pack
  charging indicator 11
BIOS 17
  package 17
  password control 17
  ROM size 17
  ROM type 17
  vendor 17
  Version 17
BIOS Setup Utility 31
BIOS Supports protocol 17
BIOS Utility 31
  Basic System Settings 34
  Navigating 32
  Startup Configuration 36
  System Information 33
Board Layout 4
  Bottom View 5
  Top View 4
brightness
  hotkeys 15

C

Cache
  controller 17
  size 17
caps lock
  on indicator 11
CardBus 24
Check Procedures 76
  Battery 76
  Memory 76
  Power Adapter 76
  Power System Checkout 76
  Touchpad 76
computer
  on indicator 11
Core logic 24
CPU
  core voltage 17
  I/O voltage 17
  package 17
  Removing 62
  type 17

D

DIMM 17
  external 49
  package 17
  removing 49
  Speed 17
  voltage 17
Disassembly
  Battery Pack 47
  LCD Module 59
  Machine 43
  Procedure Flowchart 45
Display 3
display
  hotkeys 15
Display Standby Mode 27
DMA Channel Assignment 30
DVD-ROM Interface 20

E

Environmental Requirements 27
Error Messages 80
Error Symptoms 82
  Indicator 83
  LCD 82
  Memory 83
  PCMCIA 83
  Power 83
  Power Management 84
  Speaker 83
Error Symptom-to-Spare Part Index 80
Exploded 92

F

Features 1
FIR 24
FRU 91

H

Hard disk 19, 24
Hardware Specifications and Configurations 17
HDD 19, 24
Hibernation Mode 27
Hibernation mode
    hotkey 15
Hot Keys 12

I

I/O Address Map 28
Indicators 11
IrDA 24
IRQ Assignment Map 29

J

Jumper and Connector Locations 87
    Top View 87

K

Keyboard 24
    Removing 54

L

L2 cache 17
LAN/Modem Combo 18
LCD 26
    DC-AC LCD Inverter 25

M

Machine Disassembly 43
Mechanical Specification 28
media access
    on indicator 11
Memory
    Address Map 28
Memory Address Map 28
Memory Check 76
Modem 18

P

Panel 6
    Bottom 10
    left 6
    Rear 8
    right 8
Parallel Port 23
PC Card 11, 24
PCMCIA 24
PCMCIA Socket
    Removing 69
Phoenix BIOS Error Code Messages 77
POST 80
Power Management 27
Power System Check 76
    Battery Pack 76
    Power Adapter 76
Power System Checkout 76
Processor 17

R

Removing the 2nd Fan Support Bracket 65
Removing the CPU Heat Sink 62
Removing the Hard Disk Drive Module 48
Removing the HDD Guiding Chassis 63
Removing the Keyboard Metal Bracket 54
Removing the Keyboard Metal Support 54
Removing the Keyboard Support Bracket 56
Removing the LCD 72
Removing the Optical Drive Bracket 65
Removing the RTC Battery 55
RMA 91
RTC 24

S

Screw List 46
Second Level Cache 17
speakers
    hotkey 15
Standby Mode 27
Super I/O 24
System
    Block Diagram 3
    Layout 4
System Check Procedures 76
System Memory 17
System Utilities 31

T

Temperature 27
Test Compatible Components 103
Touchpad Check 76
Troubleshooting 75

U

USB 23

utility
BIOS 31

V

Video 22, 23
Resolutions 23
Video controller 24

W

Windows XP Environment Test 104